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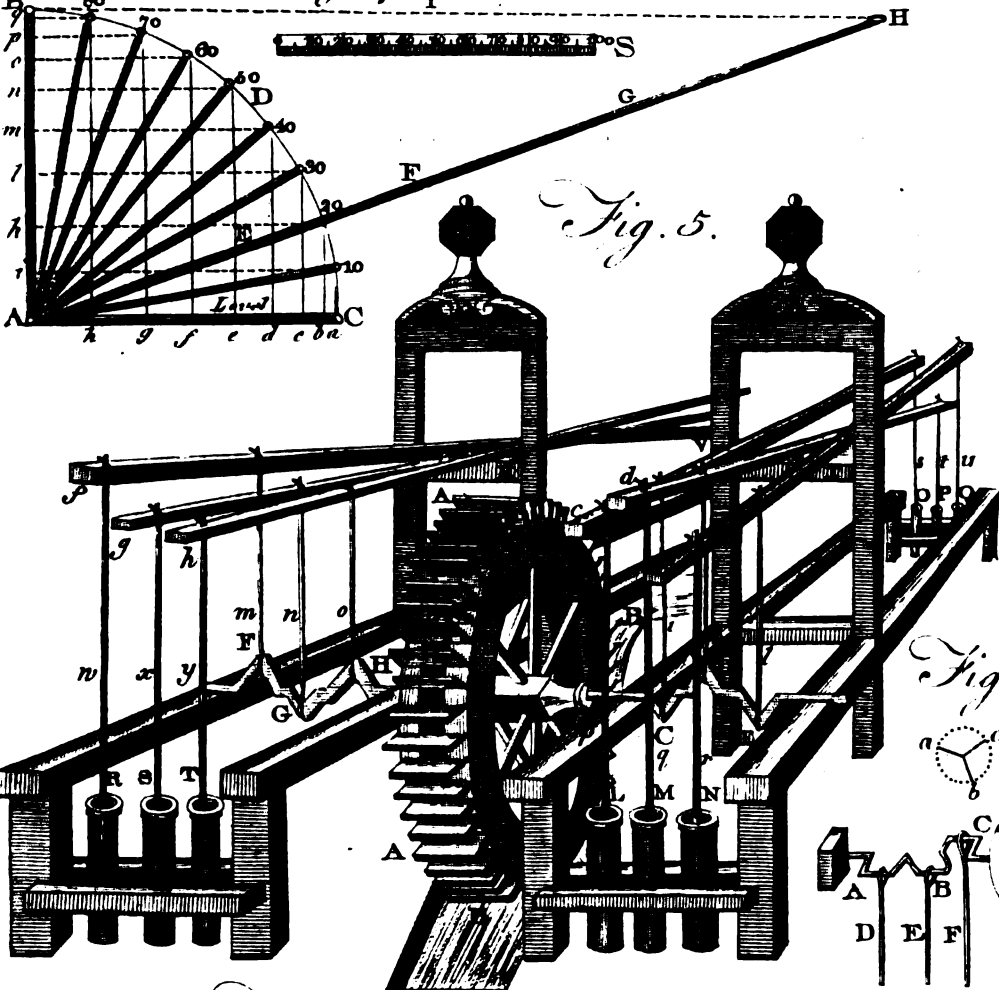


Fig. 5.

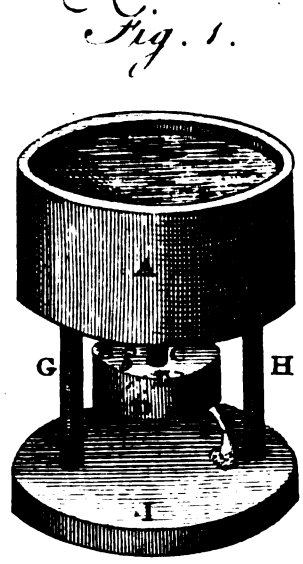


Fig. 1.



Fig. 2.

Fig. 6.

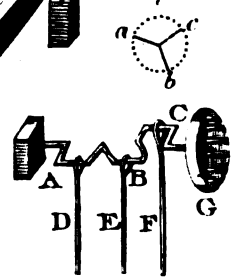


Fig. 3. Fig. 4.

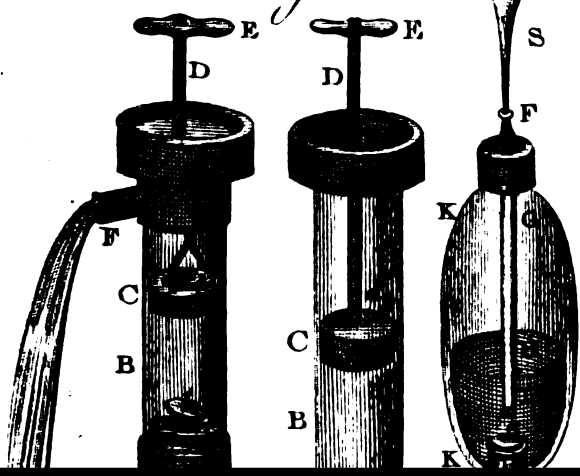
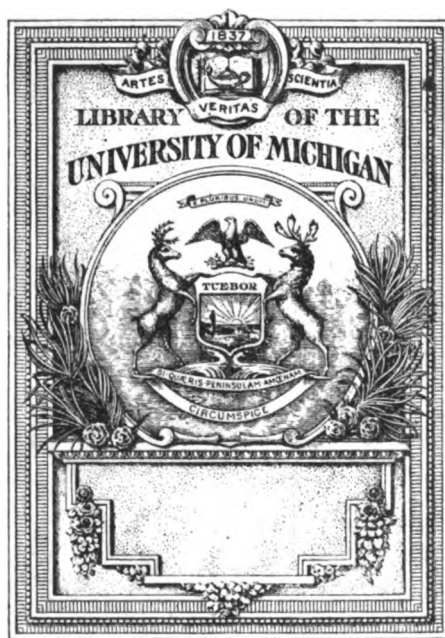


Fig. 8.

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5
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VOL. IX.

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ENCYCLOPÆDIA BRITANNICA.

H Y D R O S T A T I C S;

A SCIENCE which treats of the weight, motion, and equilibria of liquid bodies. Under this head, not only accounts of the nature and properties of fluids in general are introduced, and the laws by which they act; but also the art of weighing solid bodies in fluids, in order to discover their specific gravities.

SECT. I. *Of Fluids in general.*

Fluid defined, &c.

SIR Isaac Newton's definition of a fluid is, That it is a body yielding to any force impressed, and which hath its parts very easily moved one among another. See FLUIDITY.

This definition supposes the motion spoken of produced by a partial pressure; for in the case of an incompressible fluid, it is demonstrated by Dr Keil, that under a total or an equal pressure, it would be impossible that the yielding body should move.

The original and constituent parts of fluids are by the moderns conceived to be particles small, smooth, hard, and spherical: according to which opinion, every particle is of itself a solid or a fixed body; and, when considered singly, is no fluid, but becomes so only by being joined with other particles of the same kind. From this definition, it hath been concluded by some philosophers, that some substances, such as mercury, are essentially fluid, on account of the particular configuration of their particles; but later discoveries have evinced the fallacy of this opinion, and that fluidity is truly to be reckoned an effect of heat. See FLUIDITY.

That fluids have vacuities, will appear upon mixing salt with water, a certain quantity whereof will be dissolved, and thereby imbibed, without enlarging the dimensions. A fluid's becoming more buoyant, is a certain proof that its specific gravity is increased, and of consequence that many of its vacuities are thereby filled: after which it may still receive a certain quantity of other dissoluble bodies, the particles whereof are adapted to the vacancies remaining, without adding any thing to its bulk, though the absolute weight of the whole fluid be thereby increased.

This might be demonstrated, by weighing a phial of rain-water critically, with a nice balance: pour this water into a cup, and add salt to it; refund of the clear liquor what will again fill the phial; an increase of weight will be found under the same dimensions, from a repletion, as has been said, of the vacuities of the fresh water with saline particles.

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And as fluids have vacuities, or are not perfectly dense; it is also probable, that they are compounded of small spheres of different diameters, whose interstices may be successively filled with apt materials for that purpose: and the smaller these interstices are, the greater will the gravity of the fluid always be.

For instance, suppose a barrel be filled with bullets in the most compact manner, a great many small-shot may afterwards be placed in the interstices of those balls, the vacuities of the shot may then be replenished with a certain quantity of sea-sand; the interstices of the grains of the sand may again be filled with water; and thus may the weight of the barrel be greatly augmented, without increasing the general bulk.— Now this being true with regard to solids, is applicable also to fluids. For instance, river-water will dissolve a certain quantity of salt; after which it will receive a certain quantity of sugar; and after that, a certain quantity of alum, and perhaps other dissoluble bodies, and not increase its first dimensions.

its nature and properties.

The more perfect a fluid is, the more easily will it yield to all impressions, and the more easily will the parts unite and coalesce when separated. A perfect fluid is that whose parts are put into motion by the least force imaginable: an imperfect one is that whose parts yield to a small force, not the least. It is probable, that in nature there is no perfect fluid, the element of fire perhaps excepted; since we see that the mutual attraction of the parts of all the fluids, subject to our experiments, renders them cohesive in some degree; and the more they cling together, the less perfect their fluidity is. If, for instance, a glass be filled with water above the brim, it will visibly rise to a convex surface, which, was it a perfect fluid, free from either tenacity or cohesion, would be impossible.

Mercury, the most perfect fluid we know, is not exempt from this attraction; for should the bottom of a flat glass, having a gentle rising toward the middle, be covered thin with quicksilver, a little motion of the machine will cause the fluid soon to separate from the middle, and lie round it like a ring, having edges of a considerable thickness.

But if a like quantity thereof be poured into a golden cup, it will, on the contrary, appear higher considerably on the sides than in the middle. Which may proceed in part, perhaps, from the gold's being of great density, and therefore capable of exerting thereon a greater degree of attraction than other metals. Probably too it may happen from its having pores of

A

an

Pressure of
Fluids.

an apter disposition and magnitude to receive the minute mercurial particles, than those of iron and some other metals; and therefore the attraction of cohesion in this experiment may obtain also: and every one knows how easily these two bodies incorporate, and make a perfect *amalgama*. But the reason commonly given for the two phenomena is, that mercury, in the first case, attracts itself more than it does glass; and, in the last case, mercury attracts gold more than it does itself.

Sir Isaac Newton held all matter to be originally homogeneous; and that from the different modifications and texture of it alone, all bodies receive their various structure, composition, and form. In his definition of a fluid, he seems to imply, that he thought fluids to be composed of primary solids; and, in the beginning of his *Principia*, he speaks of sand and powders as of imperfect fluids.

3
Florentine
experiment.

Borelli has demonstrated, that the constituent parts of fluids are not fluid, but consistent bodies; and that the elements of all bodies are perfectly firm and hard. The incompressibility of water, proved by the Florentine experiment, is a sufficient evidence also, that each primary particle or spherule thereof is a perfect and impenetrable solid. Mr Locke too, in his *Essay on Human Understanding*, admits this to be so.

This famous experiment was first attempted by the great lord Verulam, who inclosed a quantity of water in lead, and found that it inclined rather to make its way through the pores of the metal, than be reduced into less compass by any force that could be applied. The academics of Florence made this experiment afterwards more accurately with a globe of silver, as being a metal less yielding and ductile than gold. This being filled with water, and well closed, they found, by hammering gently thereon, that the sphericity of the globe was altered to a less capacious figure (as might geometrically be proved); but a part of the water always like dew came through its sides before this could be obtained. This has been attempted by Sir Isaac Newton, and so many competent judges, on gold and several other metals since, with equal success, that we do not hold any fluid in its natural state, except the air, to be either compressible or elastic.—In some experiments by Mr Canton, it hath been observed, that water is more or less compressed according to the different constitution of the atmosphere; whence it hath been concluded that the Florentine experiment was erroneous: but it will not follow, that water can be compressed by any artificial force, because nature hath a method of compressing it; any more than that solid metal can be compressed artificially, though we know that very slight degrees of heat and cold will expand or contract its dimensions. See WATER.

SECT. II. Of the Gravity and Pressure of Fluids.

4
Fluids press
as much
upward as
downward.

ALL bodies, both fluid and solid, press downwards by the force of gravity: but fluids have this wonderful property, that their pressure upwards and sideways is equal to their pressure downwards; and this is always in proportion to their perpendicular height, without any regard to their quantity: for, as each particle is quite free to move, it will move towards that

part or side in which the pressure is least. And hence, no particle or quantity of a fluid can be at rest till it is every way equally pressed.

To show by experiment that fluids press upward as well as downward, let AB be a long upright tube filled with water near to its top; and CD a small tube open at both ends, and immersed into the water in the large one: if the immersion be quick, you will see the water rise in the small tube to the same height that it stands in the great one, or until the surfaces of the water in both are on the same level: which shows that the water is pressed upward into the small tube by the weight of what is in the great one; otherwise it could never rise therein, contrary to its natural gravity, unless the diameter of the bore were so small, that the attraction of the tube would raise the water; which will never happen, if the tube be as wide as that in a common barometer. And, as the water rises no higher in the small tube than till its surface be on a level with the surface of the water in the great one, this shows that the pressure is not in proportion to the quantity of water in the great tube, but in proportion to its perpendicular height therein: for there is much more water in the great tube all around the small one, than what is raised to the same height in the small one as it stands in the great.

Take out the small tube, and let the water run out of it; then it will be filled with air. Stop its upper end with the cork C, and it will be full of air all below the cork: this done, plunge it again to the bottom of the water in the great tube, and you will see the water rise up in it to the height E. Which shows that the air is a body, otherwise it could not hinder the water from rising up to the same height as it did before, namely, to A; and in so doing, it drove the air out at the top; but now the air is confined by the cork C: And it also shows that the air is a compressible body; for if it were not so, a drop of water could not enter into the tube.

The pressure of fluids being equal in all directions, it follows, that the sides of a vessel are as much pressed by a fluid in it, all around in any given ring of points, as the fluid below that ring is pressed by the weight of all that stands above it. Hence the pressure upon every point in the sides, immediately above the bottom, is equal to the pressure upon every point of the bottom.—To show this by experiment, let a hole be made at *e* Fig. 3. in the side of the tube AB close by the bottom, and another hole of the same size in the bottom at C; then pour your water into the tube, keeping it full as long as you choose the holes should run, and have two basins ready to receive the water that runs through the two holes, until you think there is enough in each basin; and you will find by measuring the quantities, that they are equal. Which shows that the water run with equal speed through both holes; which it could not have done, if it had not been equally pressed through them both. For, if a hole of the same size be made in the side of the tube, as about *f*, and if all three are permitted to run together, you will find that the quantity run through the hole at *f* is much less than what has run in the same time through either of the holes C or *e*.

In the same figure, let the tube be re curved from the bottom at C into the shape DE, and the hole at C

Plate
CCXXXIX.
fig. 2.

^{Pressure of Fluids.} C be flopt with a cork. Then pour water into the tube to any height, as A_g , and it will spout up in a jet EFG , nearly as high as it is kept in the tube AB , by continuing to pour in as much there as runs through the hole E ; which will be the case whilst the surface A_g keeps at the same height. And if a little ball of cork G be laid upon the top of the jet, it will be supported thereby, and dance upon it. The reason why the jet rises not quite so high as the surface of the water A_g , is owing to the resistance it meets with in the open air: for if a tube, either great or small, was screwed upon the pipe at E , the water would rise in it until the surfaces of the water in both tubes were on the same level; as will be shown by the next experiment.

^{The hydrostatic paradox.} Any quantity of a fluid, how small soever, may be made to balance and support any quantity, how great soever. This is deservedly termed the *hydrostatical paradox*; which we shall first show by an experiment, and then account for it upon the principle above mentioned, namely, that *the pressure of fluids is directly as their perpendicular height, without any regard to their quantity.*

Plate
CCXXXIX.
Fig. 4.

Let a small glass tube DCG , open at both ends, and bended at B , be joined to the end of a great one AI at cd , where the great one is also open; so that these tubes in their openings may freely communicate with each other. Then pour water through a small necked funnel into the small tube at H ; this water will run through the joining of the tubes at cd , and rise up into the great tube; and if you continue pouring until the surface of the water comes to any part, as A , in the great tube, and then leave off, you will see that the surface of the water in the small tube will be just as high at D ; so that the perpendicular altitude of the water will be the same in both tubes, however small the one be in proportion to the other. This shows, that the small column DCG balances and supports the great column Acd ; which it could not do if their pressures were not equal against one another in the recurved bottom at B .—If the small tube be made longer, and inclined in the situation GEF , the surface of the water in it will stand at F , on the same level with the surface A in the great tube: that is, the water will have the same perpendicular height in both tubes, although the column in the small tube is longer than that in the great one; the former being oblique, and the latter perpendicular.

Since then the pressure of fluids is directly as their perpendicular heights, without any regard to their quantities, it appears, that whatever the figure or size of vessels be, if they are of equal heights, and if the areas of their bottoms are equal, the pressures of equal heights of water are equal upon the bottoms of these vessels; even though the one should hold a thousand or ten thousand times as much water as would fill the other. To confirm this part of the hydrostatical paradox by an experiment, let two vessels be prepared of equal heights, but very unequal contents, such as AB fig. 5. and AB in fig. 6. Let each vessel be open at both ends, and their bottoms Dd , Dd be of equal widths. Let a brass bottom CC be exactly fitted to each vessel, not to go into it, but for it to stand upon; and let a piece of wet leather be put between each vessel and its brass bottom, for the sake of closeness.

Fig. 5, 6.

Join each bottom to its vessel by a hinge D , so that it may lie open like the lid of a box; and let each bottom be kept up to its vessel by equal weights E and E hung to lines which go over the pulleys F and F (whose blocks are fixed to the sides of the vessels at f), and the lines tied to hooks at d and d , fixed in brass bottoms opposite to the hinges D and D . Things being thus prepared and fitted, hold the vessel AB (fig. 6.) upright in your hands over a basin on a table, and cause water to be poured into the vessel slowly, till the pressure of the water bears down its bottom at the side d , and raises the weight E ; and then part of the water will run out at d . Mark the height at which the surface H of the water stood in the vessel, when the bottom began to give way at d ; and then, holding up the other vessel AB (fig. 5.) in the same manner, cause water to be poured into it at H : and you will see, that when the water rises to A in this vessel, just as high as it did in the former, its bottom will also give way at d , and it will lose part of the water.

The natural reason of this surprising phenomenon is, that since all parts of a fluid at equal depths below the surface are equally pressed in all manner of directions, the water immediately below the fixed part Bf (fig. 5.) will be pressed as much upward against its lower surface within the vessel, by the action of the column A_g , as it would be by a column of the same height, and of any diameter whatever; (as was evident by the experiment with the tube, fig. 4.) and therefore, since action and reaction are equal and contrary to each other, the water immediately below the surface Bf will be pressed as much downward by it, as if it was immediately touched and pressed by a column of the height gA , and of the diameter Bf : and therefore the water in the cavity $BDdf$ will be pressed as much downward upon its bottom CC , as the bottom of the other vessel (fig. 6.) is pressed by all the water above it.

To illustrate this a little farther, let a hole be made at f in the fixed top Bf , and let a tube G be put into it; then, if water be poured into the tube A , it will (after filling the cavity Bd) rise up into the tube G , until it comes to a level with that in the tube A ; which is manifestly owing to the pressure of the water in the tube A , upon that in the cavity of the vessel below it. Consequently, that part of the top Bf , in which the hole is now made, would, if corked up, be pressed upward with a force equal to the whole weight of all the water which is supported in the tube G : and the same thing would hold at g , if a hole were made there. And so, if the whole cover or top Bf were full of holes, and had tubes as high as the middle one A_g put into them, the water in each tube would rise to the same height as it is kept in the tube A , by pouring more into it, to make up the deficiency that it sustains by supplying the others, until they are all full; and then the water in the tube A would support equal heights of water in all the rest of the tubes. Or, if all the tubes except A , or any other one, were taken away, and a large tube equal in diameter to the whole top Bf were placed upon it and cemented to it, and then if water were poured into the tube that was left in either of the holes, it would ascend through all the rest of the holes, until it filled the large tube to the same

A 2

same

Pressure of Fluids.

same height that it stands in the small one, after a sufficient quantity had been poured into it: which shows, that the top *Bf* was pressed upward by the water under it, and before any hole was made in it, with a force equal that wherewith it is now pressed downward by the weight of all the water above it in the great tube. And therefore, the reaction of the fixed top *Bf* must be as great, in pressing the water downward upon the bottom *CC*, as the whole pressure of the water in the great tube would have been, if the top had been taken away, and the water in that tube left to press directly upon the water in the cavity *BD df*.

6
The hydrostatic bellows, fig. 7.

Perhaps the best machine in the world for demonstrating the upward pressure of fluids, is the hydrostatic bellows, which consists of two thick oval boards *AB*, *EF*, each about 16 inches broad, and 18 inches long: the sides are of leather, joined very close to the top and bottom by strong nails. *CD* is a pipe screwed into a piece of brass on the top-board at *C*. Let some water be poured into the pipe at *D*, which will run into the bellows, and separate the boards a little. Then lay three weights, each weighing 100 pounds, upon the upper board; and pour more water into the pipe, which will run into the bellows, and raise up the board with all the weights upon it; and if the pipe be kept full until the weights are raised as high as the leather which covers the bellows will allow them, the water will remain in the pipe, and support all the weights, even though it should weigh no more than a quarter of a pound, and they 300 pounds: nor will all their force be able to cause them to descend and force the water out at the top of the pipe.

The reason of this will be made evident, by considering what has been already said of the result of the pressure of fluids of equal heights without any regard to their quantity. For if a hole be made in the upper board, and a tube be put into it, the water will rise in the tube to the same height that it does in the pipe; and would rise as high (by supplying the pipe) in as many tubes as the board could contain holes. Now, suppose only one hole to be made in any part of the board, of an equal diameter with the bore of the pipe, and that the pipe holds just a quarter of a pound of water; if a person claps his finger upon the hole, and the pipe be filled with water, he will find his finger to be pressed upward with a force equal to a quarter of a pound. And as the same pressure is equal upon all equal parts of the board, each part, whose area is equal to the area of the hole, will be pressed upward with a force equal to that of a quarter of a pound: the sum of all which pressures against the under side of an oval board 16 inches broad, and 18 inches long, will amount to 300lb.; and therefore so much weight will be raised up and supported by a quarter of a pound of water in the pipe.

7
How a man may raise himself upward by his breath.

Hence, if a man stands upon the upper board, and blows into the bellows through the pipe, he will raise himself upward upon the board: and the smaller the bore of the pipe is, the easier he will be able to raise himself. And then, by clapping his finger upon the top of the pipe, he can support himself as long as he pleases; provided the bellows be air-tight, so as not to lose what is blown into it.

Upon this principle of the upward pressure of fluids,

a piece of lead may be made to swim in water, by immersing it to a proper depth, and keeping the water from getting above it. Let *CD* be a glass tube, open at both ends; and *EFG* a flat piece of lead, exactly fitted to the lower end of the tube, not to go within it, but for it to stand upon; with a wet leather between the lead and the tube, to make close work. Let this leaden bottom be half an inch thick, and held close to the tube by pulling the packthread *IHL* upward at *L* with one hand, whilst the tube is held in the other by the upper end *C*. In this situation, let the tube be immersed in water in the glass vessel *AB*, to the depth of six inches below the surface of the water at *K*; and then, the leaden bottom *EFG* will be plunged to the depth of somewhat more than eleven times its own thickness: holding the tube at that depth, you may let go the thread at *L*; and the lead will not fall from the tube, but will be kept to it by the upward pressure of the water below it occasioned by the height of the water at *K* above the level of the lead. For as lead is 11.33 times as heavy as its bulk of water, and is in this experiment immersed to a depth somewhat more than 11.33 times its thickness, and no water getting into the tube between it and the lead, the column of water *EabcG* below the lead is pressed upward against it by the water *KDEGL* all around the tube; which water being a little more than 11.33 times as high as the lead is thick, is sufficient to balance and support the lead at the depth *KE*. If a little water be poured into the tube upon the lead, it will increase the weight upon the column of water under the lead, and cause the lead to fall from the tube to the bottom of the glass vessel, where it will lie in the situation *bd*. Or, if the tube be raised a little in the water, the lead will fall by its own weight, which will then be too great for the pressure of the water around the tube upon the column of water below it. But the following method of making an extremely heavy body float upon water is more elegant. Take a long glass tube, open at both ends; stopping the lower end with a finger, pour in some quicksilver at the other end, so as to take up about half an inch in the tube below. Immerse this tube, with the finger still at the bottom, in a deep glass vessel filled with water; and when the lower end of the tube is about seven inches below the surface, take away the finger from it, and then you will see the quicksilver not sink into the vessel, but remain suspended upon the tube, and floating, if we may so express it, upon the water in the glass-vessel.

In the same manner as an heavy body was made to swim on water, by taking away the upward pressure; so may a light body, like wood, be made to remain sunk at the bottom, by depriving it of all pressure from below: for if two equal pieces of wood be planed, surface to surface, so that no water can get between them, and then one of them (*cd*) be cemented to the inside of the vessel's bottom; then the other being placed upon this, and, while the vessel is filling, being kept down by a stick; when the stick is removed and the vessel full, the upper piece of wood will not rise from the lower one, but continue sunk under water, though it is actually much lighter than water; for as there is no resistance to its under surface to drive it upward, while its upper surface is strongly pressed down, it must necessarily remain at the bottom.

HYDROSTATICS.

Plate CCXXXIX.

Fig. 13.

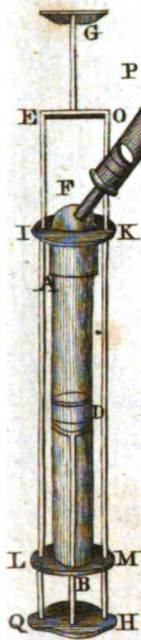


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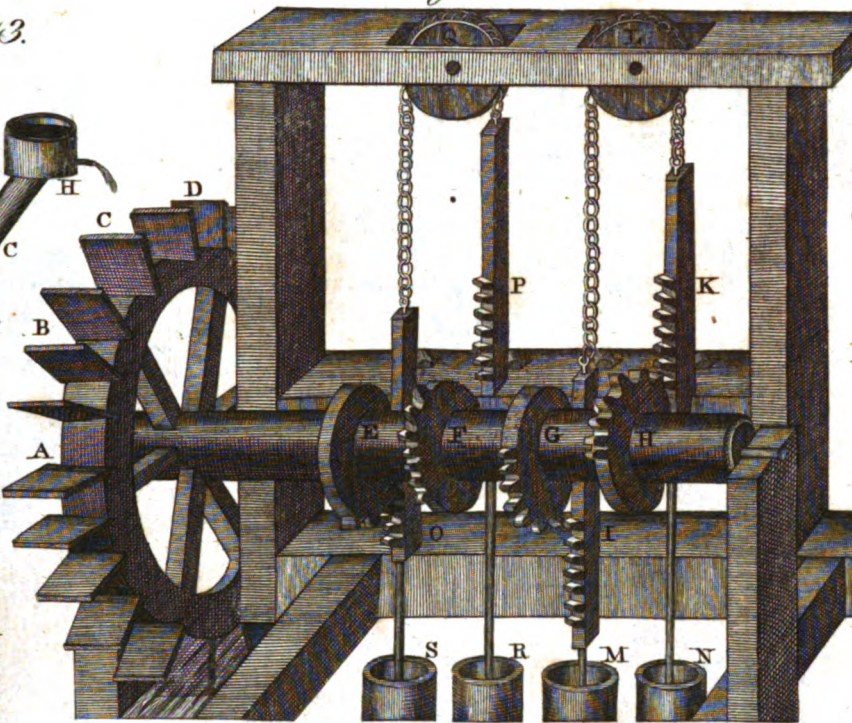


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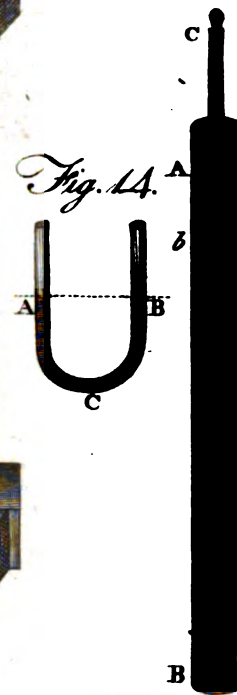


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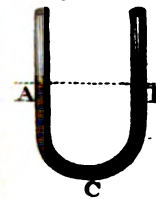


Fig. 3.

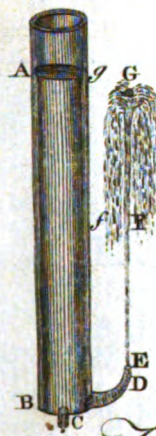


Fig. 4.

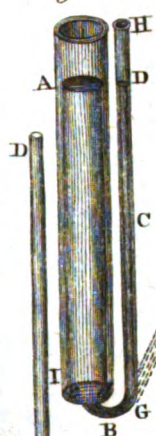


Fig. 5.

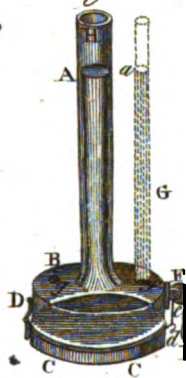


Fig. 6.

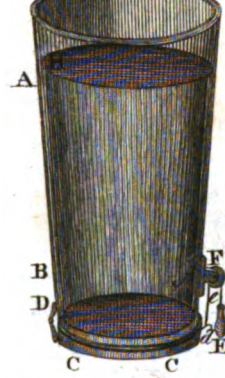


Fig. 8.

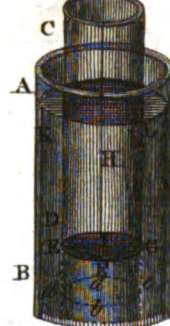


Fig. 7.

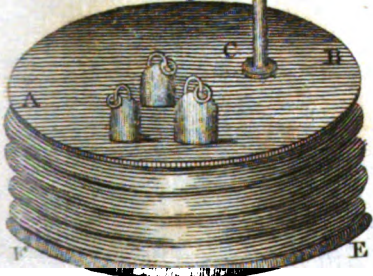
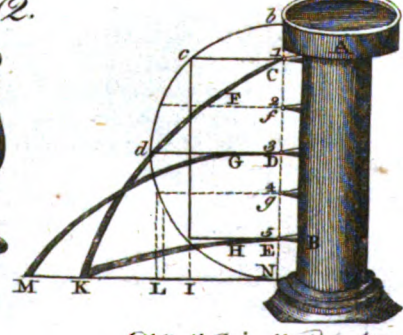


Fig. 10. Fig. 11. Fig. 12.



Fig. 9.



A. Bell & Son, Waterbury, Conn.



Specific
Gravities.
TO
Of specific
gravity.

SE&T. III. *Of the Specific Gravity of Bodies.*

WHEN an unspongy or solid body sinks in a vessel of water, it removes a body of water equal to its own bulk, out of the place to which it descends. If, for instance, a copper ball is let drop into a glass of water, we well know, that if it sinks, it will take up as much room as a globe of water equal to itself in size took up before.

Let us suppose, that this watery globe removed by the ball were frozen into a solid substance, and weighed in a scale against the copper ball: now the copper ball being more in weight than the globe, it is evident that it will sink its own scale, and drive up the opposite, as all heavier bodies do when weighed against lighter; if, on the contrary, the copper ball be lighter than the water globe, the ball will rise. Again, then let us suppose the copper ball going to be immersed in water; and that, in order to descend, it must displace a globe of water equal to itself in bulk. If the copper ball be heavier than the globe, its pressure will overcome the other's resistance, and it will sink to the bottom; but if the watery globe be heavier, its pressure upwards will be greater than that of the ball downward, and the ball will rise or swim. In a word, in proportion as the ball is heavier than the similar bulk of water, it will descend with greater force; in proportion as it is lighter, it will be raised more to the surface.

From all this we may deduce one general rule, which will measure the force with which any solid body tends to swim or sink in water; namely, *Every body immersed in water, loses just as much of its weight as equals the weight of an equal bulk of water.* Thus, for instance, if the body be two ounces, and an equal bulk of water be one ounce, the body when plunged, will sink towards the bottom of the water with a weight of one ounce. If, on the contrary, the solid body be but one ounce, and the weight of an equal bulk of water be two ounces; the solid, when plunged, will remove but one ounce, that is half as much water as is equal to its own bulk: so that, consequently, it cannot descend; for to do that, it must remove a quantity of water equal to its own bulk. Again, if the solid be too ounces, and the equal bulk of water two ounces, the solid, wherever it is plunged, will neither rise nor sink, but remain suspended at any depth.

Thus we see the reason why some bodies swim in water, and others sink. Bodies of large bulk and little weight, like cork or feathers, must necessarily swim, because an equal bulk of water is heavier than they; bodies of little bulk but great weight, like lead or gold, must sink, because they are heavier than an equal bulk of water. The bulk and the weight of any body considered together, is called its *specific gravity*; and the proportion of both in any body is easily found by water. A body of little bulk and great weight, readily sinks in water, and it is said to have specific gravity; a body of great bulk and little weight, loses almost all its weight in water, and therefore is said to have but little specific gravity. A woolpack has actually greater real gravity, or weighs more in air, than a cannon ball; but for all that, a cannon ball may have more specific gravity, and weigh more than the woolpack, in water.

Density is a general term that means the same thing; *specific gravity* is only a relative term, used when solids are weighed in fluids, or fluids in fluids.

Specific
Gravities.

As every solid sinks more readily in water, in proportion as its specific gravity is great, or as it contains greater weight under a smaller bulk, it will follow, that the same body may very often have different specific gravities, and that it will sink at one time and swim at another. Thus a man, when he happens to fall alive into the water, sinks to the bottom; for the specific gravity of his body is then greater than that of water: but if, by being drowned, he lies at the bottom for some days, his body swells by putrefaction, which disunites its parts; thus its specific gravity becomes less than that of water, and he floats upon the surface.

Several more important uses are the result of our being able exactly to determine the specific gravities of bodies. We can, by weighing metals in water, discover their adulterations or mixtures with greater exactness than by any other means whatsoever. By this means, the counterfeit coin, which may be offered us as gold, will be very easily distinguished, and known to be a baser metal. For instance, if we are offered a brass counter for a guinea, and we suspect it; suppose, to clear our suspicions, we weigh it in the usual manner against a real guinea in the opposite scale, and it is of the exact weight, yet still we suspect it; What is to be done? To melt or destroy the figure of the coin would be inconvenient and improper: a much better and more accurate method remains. We have only to weigh a real guinea in water, and we shall thus find that it loses but a nineteenth part of its weight in the balance: We then weigh the brass counter in water, and we actually find it loses an eighth part of its weight by being weighed in this manner. This at once demonstrates, that the coin is made of a base metal, and not gold; for as gold is the heaviest of all metals, it will lose less of its weight by being weighed in water than any other.

How to discover adulterations in metals.

This method Archimedes first made use of to detect a fraud with regard to the crown of Hiero king of Syracuse. Hiero had employed a goldsmith to make him a crown, and furnished him with a certain weight of gold for that purpose; the crown was made, the weight was the same as before, but still the king suspected that there was an adulteration in the metal. Archimedes was applied to; who, as the story goes, was for some time unable to detect the imposition. It happened, however, one day as the philosopher was stepping into a bath, that he took notice the water rose in the bath in proportion to the part of his body immersed. From this accident he received a hint; wherewith, he was so transported, that he jumped out of the bath, and ran naked about the streets of Syracuse, crying in a wild manner, *I have found it! I have found it!*—In consequence of this speculation, he procured a ball of gold and another of silver, exactly of the weight of the crown, considering, that if the crown were altogether of gold, the ball of gold would be of the same bulk as the crown, and when immersed in water, would raise the water just as high as the crown immersed; but if it were wholly of silver, the ball of silver being immersed, would raise the water no higher than the crown immersed; and if the crown was of gold

Specific Gravities.

gold and silver mixed in a certain proportion, this proportion would be discovered by the height to which the crown would raise the water higher than the gold and lower than the silver. Accordingly, let AMLB be a vessel filled with water to the height DC, and let the mass of gold, equal in weight to the crown, on being immersed into the water, raise the surface of it to E, and the mass of silver raise it to G; then if the height of the vessel above DC be divided into equal parts, and $DF=11$, and $DG=19$, it is plain the bulks of gold and silver will be as DF to DG , and the specific gravities in the inverse proportion of these quantities, or as DG to DF . If the crown be immersed, it will raise the surface of water to E; whence the proportion of the bulks of the gold and silver in the crown may be determined. For since the difference of the specific gravities of the gold and silver is $DG-DF=FG=8$, if the bulk of the crown is divided into eight equal parts, it is evident, that since the specific gravities of the debased and pure gold crowns will be as the bulks inversely, that is, as DF to DE , we can easily find the point H, which will express the specific gravity of the former; for $DE:DF::DG:DH$. This point H always divides the difference FG into two parts GH , HE , which have the same proportion as the parts of silver in the crown to the parts of gold; for as the point E ascends, the point H descends, and when E coincides with G, H falls upon E, and the crown becomes wholly silver; on the contrary, when E descends to F, and H ascends to G, the crown becomes wholly gold; therefore FH will be every where to HG as the parts of gold to the parts of silver in the crown. Consequently, in the present case, because the crown, when immersed, raises the water to the height DE, and H is three divisions below G, it shows that three of the eight parts of the crown are silver, and the other five parts gold, as H is five of the divisions above F. Hence the bulk of the gold in the crown is to that of the silver as 5 to 3. In some such method as this Archimedes deduced his proposition, viz. that the difference of the specific gravities of the compound and lighter ingredient, i. e. 5 (supposing the specific gravity of gold to silver as 19 to 11, and the specific gravity of the king's crown to be 16), is to the difference of the specific gravities of the heavier ingredient and the compound, i. e. 3, as the bulk of gold to that of silver made up of: so that if the whole crown were divided into eight parts, the gold would consist of five, and the silver of three; and the magnitudes 5 and 3, multiplied by the specific gravities 19 and 11 respectively, will give the numbers 95 and 33, expressing the proportion of the weight of the gold to that of the silver.

This proposition of Archimedes may be demonstrated analytically in the following manner: let the magnitudes of the gold and silver in the crown be A and B, and their specific gravities as a and b; then, since the absolute gravity of any body is compounded of its magnitude and specific gravity, the weight of the gold is aA, of the silver bB, and of the crown $aA+bB=cXA+B$, supposing c to be the specific gravity of the mixture. Hence $aA-cA=cB-bB$; and consequently $c-b:a-c::A:B$, as before.

Specific Gravities.

12
The hydrostatic balance.

Upon this difference in the weight of bodies in open air and water, the hydrostatic balance has been formed; which differs very little from a common balance, but that it hath an hook at the bottom of one scale, on which the weight we want to try may be hung by an horse-hair, and thus suspended in water, without wetting the scale from whence it hangs. First, the weight of the body we want to try is balanced against the parcel or weight in open air; then the body is suspended by the hook and horse-hair at the bottom of the scale in water, which we well know will make it lighter, and destroy the balance. We then can know how much lighter it will be, by the quantity of the weights we take from the scale to make it equipoise; and of consequence we thus precisely can find out its specific gravity compared to water (A). This is the most exact and infallible method of knowing the genuineness of metals, and the different mixtures with which they may be adulterated, and it will answer for all such bodies as can be weighed in water. As for those things that cannot be thus weighed, such as quicksilver, small sparks of diamond, and such like, as they cannot be suspended by an horse-hair, they must be put into a glass bucket, the weight of which is already known: this, with the quicksilver, must be balanced by weights in the opposite scale, as before, then immersed, and the quantity of weights to be taken from the opposite scale will show the specific gravity of the bucket and the quicksilver together: the specific gravity of the bucket is already known; and of consequence the specific gravity of the quicksilver, or any other similar substance, will be what remains.

As we can thus discover the specific gravity of different solids by plunging them in the same fluid, so we can discover the specific gravity of different fluids, by plunging the same solid body into them; for in proportion as the fluid is light, so much will it diminish the weight of the body weighed in it. Thus we may know that spirit of wine has less specific gravity than water, because a solid that will swim in water will sink in spirit; on the contrary, we may know that spirit of nitre has greater specific gravity than water, because a solid that will sink in water will swim upon the spirit of nitre. Upon this principle is made that simple instrument called an *hydrometer*, which serves to measure the lightness or weight of different fluids. For that liquors weigh very differently from each other is found by experience. Suppose we take a glass-vessel which is divided into two parts, communicating with each other by a small opening of a line and an half diameter. Let the lower part be filled up to the division with red-wine, then let the upper part be filled with water. As the red-wine is lighter than water, we shall see it in a short time rising like a small thread up through the water, and diffusing itself upon the surface, till at length we shall find the wine and water have changed their places; the water will be seen in the lower half, and the wine in the upper half, of the vessel. Or take a small bottle AB, the neck of which must be very narrow, the mouth not more than $\frac{1}{2}$ of an inch wide; and have a glass-vessel CD, whose height exceeds that of the bottle about two inches. With

Plate CCXL.
fig. 2.

(A) This is the common hydrostatic balance. The reader will see an improved apparatus at *Hydrostatic Balance*, in order of the alphabet.

Specific Gravities.

With a small funnel fill the bottle quite full of red-wine, and place it in the vessel CD, which is to be full of water. The wine will presently come out of the bottle, and rise in form of a small column to the surface of the water; and at the same time the water, entering the bottle, will supply the place of the wine; for water being specifically heavier than wine, must hold the lowest place, while the other naturally rises to the top. A similar effect will be produced if the bottle be filled with water, and the vessel with wine: for the bottle being placed in the vessel in an inverted position, the water will descend to the bottom of the vessel, and the wine will mount into the bottle.

In the same manner we may pour four different liquors, of different weights, into any glass-vessel, and they shall all stand separate and unmixed with each other. Thus, if we take mercury, oil of tartar, spirit of wine, and spirit of turpentine, shake them together in a glass, and then let them settle a few minutes, each shall stand in its proper place, mercury at the bottom, oil of tartar next, spirit of wine, and then spirit of turpentine above all. Thus we see liquors are of very different densities; and this difference it is that the hydrometer is adapted to compare. In general, all vinous spirits are lighter than water; and the less they contain of water, the lighter they are. The hydrometer, therefore, will inform us how far they are genuine, by showing us their lightness; for in pure spirit of wine it sinks less than in that which is mixed with a small quantity of water.

The hydrometer should be made of copper: for ivory imbibes spirituous liquors, and thereby alters their gravity; and glass requires an attention that is incompatible with expedition. The most simple hydrometer consists of a copper ball *Bb*, to which is soldered a brass wire *AB*, one quarter of an inch thick. The upper part of this wire being filed flat, is marked *proof*, at *m*, fig. 4. because it sinks exactly to that mark in proof-spirits. There are two other marks at *A* and *B*, fig. 3. to show whether the liquor be one-tenth above or below proof, according as the hydrometer sinks to *A*, or emerges to *B*, when a brass weight, as *C* or *K*, is screwed to its bottom *c*. There are other weights to screw on, which show the specific gravity of different fluids, quite down to common water.

The round part of the wire above the ball may be marked so as to represent river-water when it sinks to *RW*, fig. 4. the weight which answers to that water being then screwed on; and when put into spring-water, mineral-water, sea-water, and water of salt springs, it will gradually rise to the marks *SP*, *MI*, *SE*, *SA*. On the contrary, when it is put into Bristol water, rain-water, port-wine, and mountain-wine, it will successively sink to the marks *br*, *ra*, *po*, *mo*. Instruments of this kind are sometimes called *areometers*.

There is another sort of hydrometer that is calculated to ascertain the specific gravity of fluids to the greatest precision possible, and which consists of a large hollow ball *B*, fig. 5. with a smaller ball *b* screwed on to its bottom, partly filled with mercury or small shot, in order to render it but little specifically lighter than water. The larger ball has also a short neck at *C*, into which is screwed the graduated brass-wire *AC*, which, by a small weight at *A*, causes the body of the instrument to descend in the fluid, with part of the stem.

Specific Gravities.

When this instrument is swimming in the liquor contained in the jar *ILMK*, the part of the fluid displaced by it will be equal in bulk to the part of the instrument under water, and equal in weight to the whole instrument. Now, suppose the weight of the whole to be four thousand grains, it is then evident we can by this means compare the different dimensions of four thousand grains of several sorts of fluids. For if the weight at *A* be such as will cause the ball to sink in rain-water till its surface come to the middle point of the stem *20*; and after that, if it be immersed in common spring-water, and the surface be observed to stand at one-tenth of an inch below the middle point *20*; it is apparent, that the same weight of each water differs only in bulk by the magnitude of one-tenth of an inch in the stem.

Now, suppose the stem to be ten inches long, and to weigh a hundred grains, then every tenth of an inch will weigh one grain: and as the stem is of brass, which is about eight times heavier than water, the same bulk of water will be equal to one-eighth of a grain, and consequently to the one-eighth of one four-thousandth part, that is, one thirty-two thousandth part of the whole bulk. This instrument is capable of still greater precision, by making the stem or neck consist of a flat thin slip of brass, instead of one that is cylindrical: for by this means we increase the surface, which is the most requisite circumstance, and diminish the solidity, which necessarily renders the instrument still more accurate.

To adapt this instrument to all purposes, there should be two stems, to screw on and off, in a small hole at *a*. One stem should be a smooth thin slip of brass, or rather steel, like a watch-spring set straight, similar to that we have just now mentioned; on one side of which is to be the several marks or divisions to which it will sink in different sorts of water, as rain, river, spring, sea, and salt-spring waters, &c.; and on the other side you may mark the divisions to which it sinks in various lighter fluids, as hot Bath water, Bristol water, Lincomb water, Cheltenham water, port-wine, mountain, madeira, and other sorts of wines. But here the weight at *A* on the top must be a little less than before when it was used for heavier waters.

But in trying the strength of the spirituous liquors, a common cylindric stem will do best, because of its strength and steadiness: and this ought to be so contrived, that, when immersed in what is called proof-spirit, the surface of the spirit may be upon the middle point *20*; which is easily done by duly adjusting the small weight *A* on the top, and making the stem of such a length, that, when immersed in water, it may just cover the ball and rise to *a*; but, when immersed in pure spirit, it may rise to the top *A*. Then, by dividing the upper and lower parts *a 20* and *A 20*, into ten equal parts each, when the instrument is immersed into any sort of spirituous liquor, it will immediately show how much it is above or below proof.

Proof-spirit consists of half water and half pure spirit, that is, such as, when poured on gun powder, and set on fire, will burn all away; and permits the powder to take fire and flash, as in open air. But if the spirit be not so highly rectified, there will remain some water, which will make the powder wet, and unfit to take fire. Proof-spirit of any kind weighs seven pounds twelve ounces per gallon.

The

Fig. 3.

Specific Gravities.

The common method of shaking the spirits in a phial, and raising a head of bubbles, to judge by their manner of rising or breaking whether the spirit be proof, or near it, is very fallacious. There is no way so certain, and at the same time so easy and expeditious, as this by the hydrometer.

14
New improved hydrometer.

A variety of different constructions of the hydrometer have recently been made with a particular view of improving the instrument, so as to ascertain the strengths of spirits, and worts in brewing, in the most easy and accurate manner. As it would be unnecessary to describe all of them here, we shall conclude this section with descriptions of those only which have been most approved and are now in general use. The Customs have for a long time adopted an hydrometer of an old construction, by the late Mr Clarke. It differs very little from the one above described (fig. 3. 4.); and has belonging to it a great variety of weights, which are occasionally secured on to the bottom of the stem: This renders the instrument troublesome and complicated in its use, and where dispatch in business and accuracy are wanted, not so commodious as such an instrument should be.

15
Objection to Clarke's.

16
Hydrometer made by Jones.

An hydrometer upon a very simple construction, easy in its application, and sufficiently accurate for the common purposes it is wanted to answer, by distillers and others concerned in the sale and state of spirits, is made by Mr Wm. Jones mathematical instrument maker in Holborn. It requires only *three weights*, to discover the strengths of spirits from alcohol down to water. This hydrometer, like others, is adjusted to a temperate state of the air, or 60° of the thermometer with Fahrenheit's scale; but as an alteration of this temperature very materially affects the gravity of spirits, causing them by the instrument to appear stronger when the weather is hotter, and the contrary, it has been found indispensably necessary to place a thermometer in the spirits previous to the immersing of the instrument, and make a just allowance for the several degrees that the mercury may be above or below the temperature above mentioned. This has been usually, though inaccurately, estimated at the rate of one gallon allowance for every three degrees of the thermometer above or below 60°; viz. for every three degrees warmer, reckoning the spirit one gallon in the 100 weaker than what is shown by the hydrometer; and for every three degrees colder than 60°, allowing one gallon in the 100 stronger. In this hydrometer, the thermometer is united with the instrument; and from experiment its divisions are adjusted to the different degrees above or below the temperate state. The concentration is also considered in this instrument, which is the mutual penetration of spirit and water when mixed together; which in strong spirits is so considerable as to cause a diminution of 4 gallons in the 100: for example, if to 100 gallons of spirit of wine, found by the instrument to be 66 gallons in the 100 over proof, you add 66 gallons of water in order to reduce it to a proof state; the mixture, instead of producing 166 gallons, will produce 162 gallons only of proof spirits, and therefore 4 gallons will be lost in the mutual penetration of the particles of the water and spirit.

Fig. 6. is a representation of the whole instrument, with the thermometer united. Its length A B is about 9½ inches; its ball C, is of the shape nearly of an egg, and made of hard brass, and about 1½ inches N° 161.

in its horizontal diameter. It has a square stem A D, on the four sides of which are graduated the different strengths of the spirit. The other three sides not shown in this figure are represented in fig. 7. with the three weights belonging to them, marked n° 1. 2. and 3. corresponding to the sides similarly marked at the top. When the instrument is placed in the spirit to be tried, if it sinks to the divisions on the stem without a weight, the strength will be shown on the side marked 0 on the top; and it will indicate any strength from 74 gallons in the 100, to 47 to the 100 above proof. The small figures, as 4 at 66, 3½ at 61, 2½ at 48, &c. show the concentration by mixture above mentioned, viz. the rate of diminutions that will take place, by making a mixture with water, to reduce the spirit at those strengths to proof. If the hydrometer does not sink to the stem without a weight, it must be made to do so by applying either of the three weights requisite. The side n° 1. with the weight n° 1. shows the strength of spirits from 46 to 13 gallons to the 100 above proof, as before. The concentration figures are 2, 1½, &c. the use as before. The side n° 2. with the weight n° 2. shows the remainder of the over-proof to proof, the division of which is marked P on the instrument, and every gallon in 100 under proof down to 29. The side n° 3. with its weight, shows the remainder from 30 gallons in the 100 under proof down to water, marked W, which may be considered 100 in 160. The application of the thermometer (F) now appears easy and expeditious; for as it is immersed in the spirits with the hydrometer, they both may be observed at one experiment or trial. The scale of the thermometer is divided into four columns; two on one side, as shown in the figure, and two on the other. At the top of the columns are marks 0. 1. 2. 3. agreeing with the weights, or no weight, in use; and that column of divisions of the thermometer is to be observed which corresponds with the weights in use; if no weight is used; then the column marked 0 is observed. The divisions of the thermometer commence from the middle of each column at the temperate point, which is marked 0: then for as many divisions as the quicksilver in the tube appears above 0, so many gallons in the 100 must the spirit be reckoned weaker; and for so many divisions as the quicksilver may appear below 0, as many gallons in the 100 must be reckoned stronger.

Hydrometers of a similar construction, and with no more weights, Mr Jones makes for discovering to great exactness the different strengths or specific gravity of worts in brewing, of different minerals, sea-waters, &c. For these purposes the thermometer is not united with the instrument; but is found to be more useful separately, and of a larger dimension. Notwithstanding the above hydrometer answering the general purposes in an accurate and easy manner, yet the industry of several ingenious persons interested in the sale of spirits has been exerted to construct an instrument of the greatest possible exactness. The effects of heat and cold upon different strengths of spirits not being so uniform as generally understood, and every different degree of strength of spirit between water and alcohol having its peculiar degree of contraction and dilatation, errors of some importance must be found in the hydrometers constructed upon the usual principle of temperature. With a view to obviate this defect, Mr Dicae of Liverpool constructed some years back an hydrometer of the form

Specific Gravities.

17
One by Mr Dicae with a sliding rule.

Fig. 1.

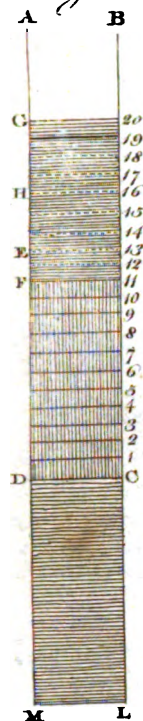


Fig. 4.

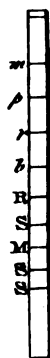


Fig. 5.

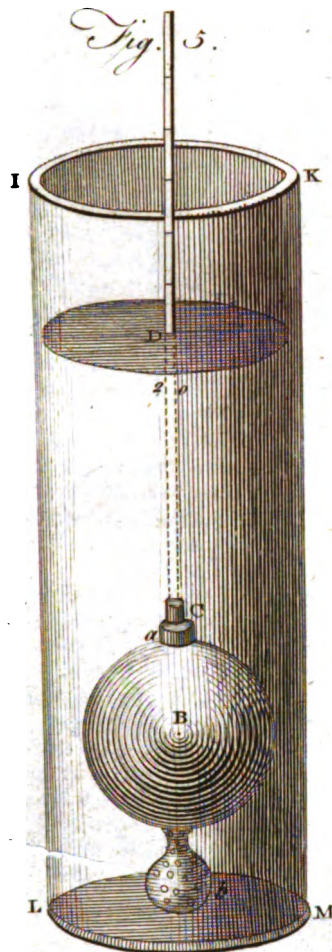


Fig. 2.



Fig. 8.

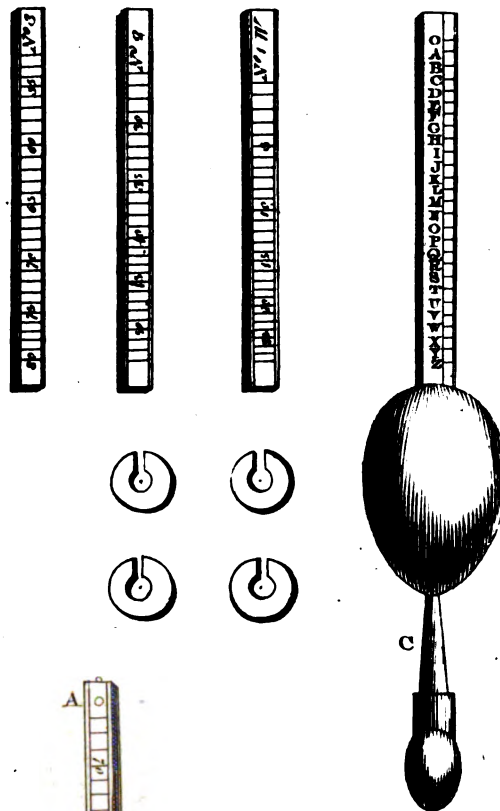


Fig. 3.

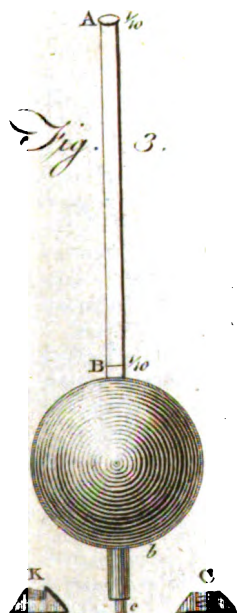


Fig. 9.

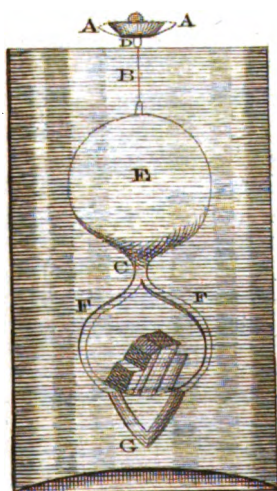
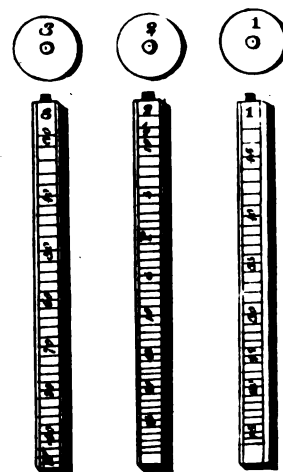


Fig. 6.



Fig. 7.



A. Bell Pin. N. & S. London print.

11

Specific Gravities.

generally used, with 36 weights, which were valued from 0 to 370, including the divisions on the stem; but the improvement consists solely in an ivory sliding rule which accompanies the instrument. In the graduation of this rule, is considered the different effects of heat and cold above-mentioned on the spirits. Every degree of strength included by the hydrometer between 0 and 370, has the same series of numbers placed on the sliding part of the rule; opposite to which, on the fixed rule, are marked the different strengths, and which are thus determined by immediate inspection. They proceed on one side from water to proof, and on the other from proof to alcohol, and divided in such a manner, as to show how many gallons in the 100 the spirits are above or below proof. There is also a line, containing the concentration for every degree of strength; and, what is the chief advantage of the rule, at one end of the side is placed a scale, containing the degree of heat from 30 to 80 of Fahrenheit's scale, with a flower de luce opposite, as an index, to fix it to the temperature of the spirits. By the assistance of this sliding rule, the exact state of the spirits is correctly obtained. A perfect comprehension of this rule can only be had by an inspection of it, and it always accompanies the hydrometer on sale. Mr Dica's has obtained a patent for his improvement.

18
Mr Quin's
universal
hydrom-
eter.

An hydrometer of a more universal construction has been made by Mr Quin, who for many years has been accustomed to construct hydrometers of various kinds. This hydrometer is made of hard brass; and therefore not so liable to be injured as fine copper, of which hydrometers are usually made: it is constructed so as to ascertain, in a plain and expeditious manner, the strength of any spirit from alcohol to water, with the concentration and specific gravity of each different strength; and discovers also the weight of worts, &c. with four weights only; which, according to the old construction of hydrometers, would require a far greater number of weights. Fig. 8. is a representation of the instrument, with its four sides of the stem graduated and figured at top, to correspond with the weights below. The side of the square-stem engraved A, B, C, D, &c. to Z, shows the strength of any spirit from alcohol to water; and the three other sides, numbered 1, 2, 3, are adapted for worts, &c. The heat and cold altering the density of spirits, and giving to every degree of strength a peculiar degree of contraction and dilatation; this circumstance is considered in dividing the sliding rule belonging to and sold with the hydrometer. This sliding rule is nearly similar to that of Mr Dica's above-mentioned, and differs but very little from it. Some directions for the use of this hydrometer may further exemplify its simplicity and accuracy.

Find the heat of the spirit by a thermometer, and bring the star on the sliding rule to the degree of heat on the thermometer scale, and against the number of the weight and letter on the stem you have the strength of the spirit pointed out on the sliding rule, which is lettered and numbered as the instrument and weights are.

The weights apply on the under stem at C.

Example. Suppose the heat of the spirit 65° by the thermometer, and of such strength as to sink the hydrometer to D on the stem, without any weight; then put the star (on the rule) to 65° of the thermometer,

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Specific Gravities.

and against D you have 75 gallons to the 100 over proof; at this strength the concentration is 5 gallons (marked above 75); and the specific gravity is nearly 811, as marked below D: so that if 75 gallons of water are added to 100 gallons of this spirit, the mixture will be hydrometer proof; but will only produce in measure 170 gallons. Again, let the heat be 50°, and the spirit require the weight n° 1. to sink the instrument to I on the stem; then put the star to 50° of heat, and against I on the sliding rule you have 52½ gallons to 100 over proof, concentration 2½ gallons, and the specific gravity 854.

If the instrument with the weight n° 2. should sink to Q on the stem, and the heat 41°, it shows the strength 19 gallons to the 100 over proof, concentration ¼, specific gravity 905.

If the spirit be at 32° of heat, and the weight n° 3. sinks the instrument to letter S on the stem on the sliding rule, it shows the liquor to be 13 gallons in the 100 under proof, concentration ¾, specific gravity 945. So of the rest. In ascertaining the strength or gravity of worts, the weight n° 4. is always to continue on the hydrometer; and the weights n° 1, 2, 3, are adapted to the sides n° 1, 2, 3, of the square stem; which discovers the exact gravity of the worts.

The instrument is adjusted so as to sink in rain water at 60° of the thermometer with the weight n° 1. to W, on the side of the stem n° 1. and shows to 26° heavier than water. The side n° 2. with its corresponding weight n° 2. shows from 26° to 53°, and the side n° 3. ascertains from 53° to 81°, or 40½ pounds per barrel heavier than water; two degrees on the stem being a pound per barrel.

To use the hydrometer in ascertaining the gravity of two or more worts.

Rule. Multiply the gravity of each wort by its respective number of barrels or gallons; divide the sum of the products by the number of gallons or barrels; the quotient will be the mean gravity required.

Suppose first wort 30 barrels,
at 60° gravity,
second wort 20 barrels,
at 35° gravity.

60°	35°
30 barrels	20 barrels
1800	700
700	

50)2500(50° mean gravity required.
2500

When the heat of the worts cannot be conveniently tried at 60° of the thermometer, the following small table shows the number of divisions to be added for the heat:

Degrees of the thermometer	60	0	Degrees of the hydrometer to be added.
	72	1	
	82	2	
	91	3	
	99	4	

This table is not philosophically true; yet the error from it will not exceed a quarter of a pound per barrel in any gravity, and for fermentation; but for more accuracy in this particular Mr Quin completes a scale which may be applied to any particular degree of heat.

B

Mr

Specific Gravities.

Mr Nicholson has lately improved the construction of the hydrometer, and made it a new instrument for measuring the specific gravity of bodies; and for that purpose it appears the most accurate of any yet constructed. See fig. 9. where AA represents a small scale, which may be taken off at D; diameter $1\frac{1}{2}$ inch, weight 44 grains. B a stem of hardened steel wire; diameter $\frac{1}{8}$ inch. E a hollow copper globe; diameter $2\frac{1}{8}$ inches, weight with stem 369 grains. FF a stirrup of wire screwed to the globe at C. G a small scale serving likewise as a counterpoise; diameter $1\frac{1}{2}$ inch, weight with stirrup 1634 grains. The other dimensions may be had from the figure, which is $\frac{1}{2}$ of the linear magnitude of the instrument itself.

In the construction, it is assumed, that the upper scale shall constantly carry 1000 grains when the lower scale is empty, and the instrument sunk in distilled water at the temperature of 60° Fahrenheit to the middle of the wire or stem. The length of the stem is arbitrary, as is likewise the distance of the lower scale from the surface of the globe. But the length of the stem being settled, the lower scale may be made lighter, and consequently the globe less, the greater its distance is taken from the surface of the globe; and the contrary. It is to be noted that the diameter of each scale must not be less than the side of a cube of water weighing 1000 grains.

The distances of the upper and lower scales respectively from the nearest surface of the globe being settled, add half the side of a cube of water weighing 1000 grains to the distance of the upper scale. This increased distance, and the said distance of the lower scale, may be considered as the two arms of a lever; and, by the property of that mechanical power,

As the number expressing the lower distance,

Is to the whole weight above; namely 1000 grains added to the weight of the upper scale;

So is the number expressing the upper distance,

To the lower weight, when the instrument has no tendency to any one position.

This last found weight must be considerably increased, in order that the instruments may acquire and preserve a perpendicular position.

Add together into one sum the weight of the lower scale thus found, the weight of the upper scale and its load, and the estimate weight of the ball and wires. Find the solid content of an equal weight of water; and thence, by the common rules of mensuration the diameter of an equal sphere. This will be the diameter, from outside to outside, of the globe that will float the whole.

As this process, and every other part of the present description, may be easily deduced from the well known laws of hydrostatics, it is unnecessary to enlarge here on the demonstrative part.

To measure the specific gravities and thermometrical expansions of fluids. If the extreme length or height of the instrument be moderate, its weight, when loaded, will be about 3100 grains. It is, however, necessary in practice, that its weight should be accurately found by experiment. This whole weight is equal to that of a quantity of distilled water at the temperature of 60° , whose bulk is equal to that part of the instrument which is below the middle of the stem. If, therefore, the instrument be immersed to the middle of the stem in any other fluid at the same temperature

(which may be done by altering the load), the difference between this last load and 1000 grains will be the difference between equal bulks of water and of the other fluid, the weight or the mass of water being known to be 3100 grains. If the said difference be excess above 1000 grains it must be added, or if it be defect subtracted from 3100 grains: the sum or remainder will be a number whose ratio to 3100 will express the ratio of the specific gravity of the assumed fluid to that of water. And this ratio will be expressed with considerable accuracy; for the instrument having a cylindrical stem of no more than $\frac{1}{8}$ of an inch diameter, will be raised or depressed near one inch by the subtraction or addition of $\frac{1}{10}$ of a grain, and will therefore indicate with ease such mutations of weight as do not fall short of $\frac{1}{10}$ of a grain, or $\frac{1}{31000}$ th part of the whole. Consequently, the specific gravities of all fluids, in which this instrument can be immersed, will be found to five places of figures.

It is evident; that this instrument is a kind of thermometer, perhaps better adapted than the common one for measuring the expansions of fluids by heat. As the fluid, in the common thermometer, rises by the excess of expansion of the fluid beyond the expansion of the glass vessel; so this instrument will fall by the excess of the same expansion beyond the proper expansion of the materials it is composed of.

To measure the specific gravities of solid bodies. The solid bodies to be tried by this instrument must not exceed 1000 grains in weight. Place the instrument in distilled water, and load the upper scale or dish till the surface of the water intersects the middle of the stem. If the weights required to effect this be exactly 1000 grains, the temperature of the water answers to 60° of Fahrenheit's scale; if they be more or less than 1000 grains, it follows, that the water is colder or warmer. Having taken a note of this weight, unload the scale, and place therein the body whose specific gravity is required. Add more weight, till the surface of the water again bisects the stem. The difference between the added weight and the former load is the weight of the body in air. Place now the body in the lower scale or dish under water, and add weights on the upper scale till the surface of the water once more bisects the stem. This last added weight will be the difference between 1000 grains and the weight of the body in water. To illustrate this by an example.

N. B. The specific gravity of lead and tin, and (probably other metals) will vary in the third figure when the same piece of metal is melted and cooled a second time. This difference probably arises from the arrangement of the parts in cooling more or less suddenly.

	Grains.
The load was found by experiment	999,10
A piece of cast lead required the additional weight	210,85
Difference is absolute weight in air	788,25
Additional weight when the lead was in the lower scale	280,09
Difference between the two additional weights or loss by immersion	69,24
	788,25 = 11384
Hence specific gravity	69,24 = 1000

When.

Specific Gravities.

Specific Gravities.

When the instrument is once adjusted in distilled water, common water may be afterwards used. For the ratio of the specific gravity of the water made use of to that of distilled water being known ($=\frac{b}{a}$), and the ratio of the specific gravity of the solid to the water made use of being also known ($=\frac{c}{b}$), the ratio of the specific gravity of the solid to that of distilled water will be compounded of both (that is, $\frac{cb}{ab}$).

There is reason to conclude from the experiments of various authors, that they have not paid much attention either to the temperature or specific gravity of the water they made use of. They who are inclined to be contented with a less degree of precision than is intended in the construction here described, may change the stem, which for that purpose may be made to take out for a larger.

One of the greatest difficulties that attends hydrostatical experiments, arises from the attraction or repulsion that obtains at the surface of the water. After trying many expedients to obviate the irregularities arising from this cause, Mr Nicholson finds reason to prefer the simple one, of carefully wiping the whole instrument, and especially the stem, with a clean cloth. The weights in the dish must not be esteemed accurate while there is either a cumulus or a cavity in the water round the stem.

Yet, after all, we cannot with great geometrical certainty rely upon either the hydrometer or the hydrostatic balance; for there are some natural inconveniences that disturb the exactness with which they discover the specific gravities of different bodies. Thus, if the weather be hotter at one time than another, all fluids will swell, and consequently they will be lighter than when the weather is cold: the air itself is at one time heavier than at another, and will buoy up bodies weighed in it; they will therefore appear lighter, and will of consequence seem heavier in water. In short, there are many causes that would prevent us from making tables of the specific gravities of bodies, if rigorous exactness were only expected; for the individuals of every kind of substance differ from each other, gold from gold, and water from water. In such tables, therefore, all that is expected is to come as near the exact weight as we can; and from an inspection into several, we may make an average near the truth. Thus, Muschenbroek's table makes the specific gravity of rain-water to be nearly eighteen times and an half less than that of a guinea; whereas our English tables make it to be but seventeen times and an half, nearly, less than the same. But though there may be some minute variation in all our tables, yet they in general may serve to conduct us with sufficient accuracy.

In constructing tables of specific gravities with accuracy, the gravity of water must be represented by unity or 1.000, where three cyphers are added to give room for expressing the ratios of other gravities in decimal parts, as in the following table.

A TABLE of the SPECIFIC GRAVITIES of several Solid and Fluid Bodies.

Specific Gravities.

19
Table of
specific gravities.

A cubic inch of	Troy weight.			Avoird.		Comparative weight
	oz.	pw.	gr.	oz.	drams.	
Very fine gold	10	7	3.83	1	5.80	19.637
Standard gold	9	19	6.44	10	14.90	18.888
Guinea gold	9	7	17.18	10	4.76	17.793
Moidore gold	9	0	19.84	9	14.71	17.140
Quicksilver	7	7	11.61	8	1.45	14.019
Lead	5	19	17.55	6	9.08	11.325
Fine silver	5	16	23.23	6	6.66	11.087
Standard silver	5	11	3.36	6	1.54	10.535
Copper	4	13	7.04	5	1.89	8.843
Plate-brass	4	4	9.60	4	10.09	8.000
Steel	4	2	20.12	4	8.70	7.852
Iron	4	0	15.20	4	6.77	7.645
Block-tin	3	17	5.68	4	3.79	7.321
Spelter	3	14	12.86	4	1.42	7.065
Lead ore	3	11	17.76	3	14.96	6.800
Glass of antimony	2	15	16.89	3	0.89	5.280
German antimony	2	2	4.80	2	5.04	4.000
Copper ore	2	1	11.83	2	4.43	3.775
Diamond	1	15	20.88	1	15.48	3.400
Clear glass	1	13	5.58	1	13.16	3.150
Lapis lazuli	1	12	5.27	1	12.27	3.054
Welch asbestos	1	10	17.57	1	10.97	2.913
White marble	1	8	13.41	1	9.06	2.707
Black ditto	1	8	12.65	1	9.02	2.704
Rock crystal	1	8	1.00	1	8.61	2.658
Green glass	1	7	15.38	1	8.26	2.620
Cornelian stone	1	7	1.21	1	7.73	2.568
Flint	1	6	19.63	1	7.53	2.542
Hard paving stone	1	5	22.87	1	6.77	2.460
Live sulphur	1	1	2.40	1	2.52	2.000
Nitre	1	0	1.08	1	1.59	1.900
Alabaster	0	19	18.74	1	1.35	1.875
Dry ivory	0	19	6.09	1	0.89	1.825
Brimstone	0	18	23.76	1	0.66	1.800
Alum	0	17	21.92	0	15.72	1.714
Ebony	0	11	18.82	0	10.34	1.117
Human blood	0	11	2.89	0	9.76	1.054
Amber	0	10	20.79	0	9.54	1.030
Cow's milk	0	10	20.79	0	9.54	1.030
Sea-water	0	10	20.79	0	9.54	1.030
Pump-water	0	10	13.30	0	9.26	1.000
Spring-water	0	10	12.94	0	9.25	0.999
Distilled water	0	10	11.42	0	9.20	0.993
Red wine	0	10	11.42	0	9.20	0.993
Oil of amber	0	10	7.63	0	9.06	0.978
Proof spirits	0	9	19.73	0	8.62	0.931
Dry oak	0	9	18.00	0	8.56	0.925
Olive oil	0	9	15.17	0	8.45	0.913
Pure spirits	0	9	3.27	0	8.02	0.866
Spirit of turpentine	0	9	2.76	0	7.99	0.864
Oil of turpentine	0	8	8.53	0	7.33	0.772
Dry crabtree	0	8	1.69	0	7.08	0.765
Sassafras wood	0	5	2.04	0	4.46	0.482
Cork	0	2	12.77	0	2.21	0.240

Take away the decimal point from the numbers in the right-hand column, or (which is the same) multiply them by 1000, and they will show how many ounces

B 2

ounces

Hydraulics. ounces avoirdupois are contained in a cubic foot of each body.

²⁰ How to find out the quantity of adulteration in metals. The use of the table of specific gravities will best appear by an example. Suppose a body to be compounded of gold and silver, and it is required to find the quantity of each metal in the compound.

First find the specific gravity of the compound, by weighing it in air and in water; and dividing its aerial weight by what it loses thereof in water, the quotient will show its specific gravity, or how many times it is heavier than its bulk of water. Then subtract the specific gravity of silver (found in the table) from that of the compound, and the specific gravity of the compound from that of gold; the first remainder shows the bulk of gold, and the latter the bulk of silver, in the whole compound: and if these remainders be multiplied by the respective specific gravities, the products will show the proportion of weights of each metal in the body.

Suppose the specific gravity of the compounded body be 13; that of standard silver (by the table) is 10.5, and that of gold 19.63; therefore 10.5 from 13, remains 2.5, the proportional bulk of the gold; and 13 from 19.63, remains 6.63, the proportional bulk of silver in the compound. Then, the first remainder 2.5, multiplied by 19.63, the specific gravity of gold, produces 49.075 for the proportional weight of gold; and the last remainder 6.63 multiplied by 10.5, the specific gravity of silver, produces 69.615 for the proportional weight of silver in the whole body. So that for every 49.07 ounces or pounds of gold, there are 69.6 pounds or ounces of silver in the body.

Hence it is easy to know whether any suspected metal be genuine, or alloyed, or counterfeit; by finding how much it is heavier than its bulk of water, and comparing the same with the table: if they agree, the metal is good; if they differ, it is alloyed or counterfeited.

²¹ How to try spirituous liquors. A cubical inch of good brandy, rum, or other proof spirits, weighs 235.7 grains; therefore, if a true inch cube of any metal weighs 235.7 grains less in spirits than in air, it shows the spirits are proof. If it loses less of its aerial weight in spirits, they are above proof; if it loses more, they are under: For, the better the spirits are, they are the lighter; and the worse, the heavier.

SECT. IV. *Hydraulics.*

HYDRAULICS is that part of hydrostatics, which teaches to estimate the swiftness or the force of fluids in motion.

It has been always thought an inquiry of great curiosity, and still greater advantage, to know the causes by which water spouts from vessels to different heights and distances. We have observed, for instance, an open vessel of liquor upon its stand, pierced at the bottom: the liquor, when the opening is first made, spouts out with great force; but as it continues to run, becomes less violent, and the liquor flows more feebly. A knowledge of hydraulics will instruct us in the cause of this diminution of its strength; it will show precisely how far the liquor will spout from any vessel, and how fast or in what quantities it will flow. Upon the principles of this science, many machines worked

by water are entirely constructed; several different engines used in the mechanic arts, various kinds of mills, pumps, and fountains, are the result of this theory, judiciously applied.

And what is thus demonstrated of the bottom of the vessel, is equally true at every other depth whatsoever. Let us then reduce this into a theorem: *The velocity with which water spouts out at a hole in the side or bottom of a vessel, is as the square root of the depth or distance of the hole below the surface of the water.* For, in order to make double the quantity of a fluid run through one hole as through another of the same size, it will require four times the pressure of the other, and therefore must be four times the depth of the other below the surface of the water: and for the same reason, three times the quantity running in an equal time through the same sort of hole, must run with three times the velocity; which will require nine times the pressure, and consequently must be nine times as deep below the surface of the fluid: and so on.—To prove this by an experiment: Let two pipes, as C and g, of equal-sized bores, be fixed into the side of the vessel AB; the pipe g being four times as deep below the surface of the water at b in the vessel as the pipe C is: and whilst these pipes run, let water be constantly poured into the vessel, to keep the surface still at the same height. Then if a cup that holds a pint be so placed as to receive the water that spouts from the pipe C, and at the same moment a cup that holds a quart be so placed as to receive the water that spouts from the pipe g, both cups will be filled at the same time by their respective pipes.

The horizontal distance to which a fluid will spout from a horizontal pipe in any part of the side of an upright vessel below the surface of the fluid, is equal to twice the length of a perpendicular to the side of the vessel, drawn from the mouth of the pipe to a semicircle described upon the altitude of the fluid: and therefore, the fluid will spout to the greatest distance possible from a pipe whose mouth is at the centre of the semicircle; because a perpendicular to its diameter (supposed parallel to the side of the vessel) drawn from that point, is the longest that can possibly be drawn from any part of the diameter to the circumference of the semicircle. Thus, if the vessel AB be full of water, the horizontal pipe D be in the middle of its side, and the semicircle N e d c b be described upon D as a centre, with the radius or semidiameter D g N, or D f b, the perpendicular D d to the diameter N D b is the longest that can be drawn from any part of the diameter to the circumference N e d c b. And if the vessel be kept full, the jet G will spout from the pipe D, to the horizontal distance N M, which is double the length of the perpendicular D d. If two other pipes, as C and E, be fixed into the side of the vessel at equal distances above and below the pipe D, the perpendiculars C c and E e, from these pipes to the semicircle, will be equal: and the jets F and H spouting from them will each go to the horizontal distance N K; which is double the length of either of the equal perpendiculars C c or D d.

Fluids by their pressure may be conveyed over hills and valleys in bended pipes, to any height not greater than the level of the springs from whence they flow. This is what the ancients were ignorant of; and therefore they

Hydraulics. they usually built AQUEDUCTS (vast rows of arches one above another, between two hills, at a vast expence of money, time, and labour), in order to convey water over them, cross the valley, in a common channel. This is now done to equal advantage, and at much less expence, by a range of pipes laid down one hill and up the other. An instance whereof may be given by a bent tube or crane; into one of the equal legs whereof if water be poured, it will rise to the same level exactly in the other. The reason is obvious: In the leg A, (fig. 14.) there are, suppose, two ounces of water endeavouring by the power of gravity to descend with the force of 2; these will thrust forward, buoy up, and support an equal quantity of a like fluid in B; and the bottom of the machine C, against which both sides equally bear, will of consequence sustain a double pressure, or that of four ounces; and in the present case will pretty well represent the prop. or fixed point of a balance-beam; as the equal fluid-columns AC, and BC, may be admitted to denote equal weights, suspended on the balance-arms, counterpoising each other. So: that the rise of fluids to their first level, thus considered, is a case truly statical; and all their other motions proceed only from weight added.

25
The syphon.

A syphon, generally used for decanting liquors, is a bended pipe, whose legs are of unequal lengths; and the shortest leg must always be put into the liquor intended to be decanted, that the perpendicular altitude of the column of liquor in the other leg may be longer than the column in the immersed leg, especially above the surface of the water. For, if both columns were equally high in that respect, the atmosphere, which presses as much upward as downward, and therefore acts as much upward against the column in the leg that hangs without the vessel, as it acts downward upon the surface of the liquor in the vessel, would hinder the running of the liquor through the syphon, even though it were brought over the bended part by suction. So that there is nothing left to cause the motion of the liquor, but the superior weight of the column in the longer leg, on account of its having the greater perpendicular height.

Fig. 20.

Let D be a cup filled with water to C; and ABC a syphon, whose shorter leg BCF is immersed in the water from C to F. If the end of the other leg were no lower than the line AC, which is level with the surface of the water, the syphon would not run, even though the air should be drawn out of it at the mouth A. For although the suction would draw some water at first, yet the water would stop at the moment the suction ceased; because the air would act as much upward against the water at A, as it acted downward for it by pressing on the surface at C. But if the leg AB comes down to G, and the air be drawn out at G by suction, the water will immediately follow, and continue to run until the surface of the water in the cup comes down to F; because, till then, the perpendicular height of the column BAG will be greater than that of the column CF; and, consequently, its weight will be greater, until the surface comes down to F; and then the syphon will stop, though the leg CF should reach to the bottom of the cup. For which reason, the leg that hangs without the cup is always made long enough to reach below the level of its bottom;

as from d to E: and then, when the syphon is emptied of air by suction at E, the water immediately follows, and by its continuity brings away the whole from the cup; just as pulling one end of a thread will make the whole clue follow.

If the perpendicular height of a syphon, from the surface of the water to its bended top at B, be more than 33 feet, it will draw no water, even though the other leg were much longer, and the syphon quite emptied of air, because the weight of a column of water 33 feet high, is equal to the weight of as thick a column of air, reaching from the surface of the earth to the top of the atmosphere: so that there will then be an equilibrium; and consequently, though there would be weight enough of air upon the surface C to make the water ascend in the leg CB almost to the height B, if the syphon were emptied of air, yet the weight would not be sufficient to force the water over the bend; and therefore it could never be brought into the leg BAG.

Mercury may be drawn through a syphon in the same manner as water; but then the utmost height of the syphon must always be less than 30 inches, as mercury is near 14 times heavier than water. That fluids are forced through the syphon by the pressure of the atmosphere, is proved experimentally by the air-pump; for, if a syphon immersed in a vessel of water be placed when running in the receiver, and the air extracted, the running will immediately cease. It is however certain, that a syphon of a particular kind, once set a running, will persist in its motion, though removed into the most perfect vacuum our air-pumps will make: or, if the lower orifice of a full syphon be shut, and the whole be thus placed in a receiver, with a contrivance for opening the orifice when the air is exhausted; the water will be all emptied out of the vessel, as if it had been in open air.

This fact has been sufficiently ascertained by many approved hydrostatical writers. Desaguliers informs us, that he made the experiment both with water and mercury; for having filled a syphon, recurved at the extremities of its legs, successively with those liquors, and suspended it by a slip-wire in the receiver of an air-pump, over two small jars containing mercury to unequal heights (and water, when water was used in the syphon), he exhausted the air out of the receiver, and then letting down the syphon, so that its two ends went into the liquor in the jars, the liquor ran from the higher into the lower vessel. He also made an experiment in the open air, where the mercury ran through a syphon, whose bend was more than 31 inches above the lower orifice of the short leg of the syphon. But neither of these experiments afford a just objection against the preceding doctrine, viz. that the air is the cause of the discharge of liquors from one vessel into another by means of syphons; for its running in *vacuo* was only owing to the attraction of cohesion, which acts for a small height; because the experiment will not succeed in *vacuo*, if the syphon used for mercury has its bend six inches higher than the orifice of the short leg, and if the bend for the syphon of water be two or three feet high; neither will the last mentioned with mercury in the open air answer, if the bend of the syphon be forty inches high; and in all the experiments the bore of the syphons must be very small.

The:

Hydraulics.
Plate
CCXLII.

The figure of the syphon may be varied at pleasure, (see fig. 1. 2. 3.) provided only the orifice C be below the level of the surface of the water to be drawn up; but still the farther it is distant from it, the faster will the fluid be carried off. And if, in the course of the flux, the orifice A be drawn out of the fluid, all the liquor in the syphon will go out at the lower orifice C; that in the leg CB dragging, as it were, that in the shorter leg AB after it. If a filled syphon be so disposed, as that both orifices A and C be in the same horizontal line; the fluid will remain pendant in each leg, how unequal soever the length of the legs may be. Fluids, therefore, in syphons, seem as it were to form one continued body; so that the heavier part descending like a chain, pulls the lighter after it.

Upon the principle of the syphon depend the experiments of *Tantalus's cup*, n^o 44; the *Fountain at command*, n^o 45; and the *inverted drinking-glass*, n^o 58. As to the last of these, it may be here observed, that if the paper was put dry on such a vessel empty, it would sink in the air, and fall away even by its own gravity; and if put on wet, it were to be doubted whether a very small weight added thereto would not separate it from the glass, so inconsiderable would the tenacity of the water be in this case. The paper therefore cannot be supposed to support the incumbent weight of water; and the true cause thereof must be this: The bottom and sides of the inverted glass-vessel being rigid, keep off the pressure of the air from the fluid above, whereas it hath liberty of access and freely acts thereon below: and that it does so, will in part appear to an observer by the concavity of the paper underneath. Could the air's pressure in this case be any-how admitted through the foot of the vessel inverted, without doubt the whole column would descend together. And the like would happen should the paper be removed; but for a different reason, viz. the large column of water in the mug, being composed of many collateral ones, which, being disposed as in a bundle, rest on the paper wherewith the vessel is covered, as on a common base; and these being all equally dense, and equally fluid, are all retained, and continued of the same length, by the general and uniform pressure of the air against the paper below; and so long as this continues, none of them getting the least advantage over the rest, they are all sustained in a body compact together. But when the paper is removed, it being scarce possible to hold the vessel so exactly level, but that some one or other of these smaller fluid columns will become longer, consequently heavier, than those adjacent, and, over-balancing the rest, will descend, and give the lighter fluid, the air, leave to rise in its place, even to the top of the glass: the general pressure whereof being there admitted, will soon cause the rest of them to move, and the whole quantity will then descend, seemingly together.

Again, should a vessel be but part filled with water, the same effect will follow to a certain degree. For instance, suppose we fill a long glass half with water, cover it with paper, and turn it down as before. Six inches suppose of water, endeavouring to descend, will by its weight rarefy the air in the glass above it, perhaps a sixth part or more. The denser air without will then overpoise the air rarefied within; and there-

fore a certain quantity of water, equal to the difference of the two pressures, will in this case be thereby buoyed up and supported. But the air within the glass being dilated as aforesaid, the water suspended must be expected to hang something below the mouth of it; though not enough, perhaps, to overcome the tenacity of the water, and make it all descend.

Upon the principle of the syphon also we may easily account for *intermitting* or *reciprocating springs*. Letting springs AA be part of a hill, within which there is a cavity BB; and from this cavity a vein or channel running in the direction of BCDE. The rain that falls upon the side of the hill will sink and strain through the small pores and crannies G, G, G, G; and fill the cavity K with water. When the water rises to the level HHC, the vein BCDE will be filled to C, and the water will run through CDF as through a syphon; which running will continue until the cavity be emptied, and then it will stop until the cavity be filled again.

We have seen that fluids led in pipes will always rise to the level of the reservoir whence they are supplied; the rising column being pushed forward, and raised by another equally heavy, at the same time endeavouring to descend. A like effect might be expected from jets of water thus impelled, did not friction against the sides of the machines, and the resistance of the air, both lateral and perpendicular, generally prove an abatement, and prevent its rising so high as the head.

Where jets are executed in the best manner, and the friction spoken of is as much as possible removed, the impediment of the air only, through which they needs must beat in their rise, will cause them, according to experiment, to fall short of the height of the reservoirs, in the following proportions, viz.

Feet.	RESERVOIR, Feet. Inches.
5	5 : 1
10	10 : 4
15	15 : 9
20	21 : 4
25	27 : 1
30	33 : 0
35	39 : 1
40	45 : 4
45	51 : 9
50	58 : 4
55	65 : 1
60	72 : 0
65	79 : 1
70	86 : 4
75	93 : 9
80	101 : 4
85	109 : 1
90	117 : 0
95	125 : 1
100	133 : 4

Whence in general it may be observed:
That as often as a five-foot jet (to be taken as these matters as a standard,) Shall

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Shall be contained in the height of any jet proposed; By so many inches multiplied into themselves, or squared,

The surface of the water in the reservoir which supplies it, ought to exceed that jet in height.

Thus, to obtain a jet of 30 feet, which contains five feet six times, the reservoir ought to be 36 inches or a yard higher; and a jet of 60 feet may be had from a head higher by four times that difference, 144 inches, or four yards. So that jets done in the best manner fall short of the heights of their reservoirs, in a kind of sub-duplicate ratio of the heights to which they rise.

This great disproportion in the rise of jets must in general be owing to the resistance of the air they are made to move through; which has been shown to be in proportion to the squares of their celerities respectively: nor can the acceleration of the falling water in the pipe, or the retardment of the rising stream by the action of gravity, be concerned at all in it; since these are probably adequate, and counterbalance each other every where in the same level.

Their air's resistance being thus considerable, it will always be found necessary to increase the bore of the adjutage or spouting-pipe with the height of the reservoir: for if it be too small, the rising stream will want sufficient weight and power to divide the air; which being densest near the earth, a small stream of water, endeavouring to mount to a great height, will be dashed against it with so great violence, as to fall away in a mist and be wholly lost. And it may be observed, that the weightier any body is, the greater force it will have when in motion: since an ounce-ball fired from a musket, will go much farther, and do greater execution, than will an equal weight of shot; and these again may be projected farther than so much lead rasped into powder and fired off. A charge of water fired from a pistol would scarce wet a paper at the distance of six feet. Accordingly, should a cask of water be any where pierced with holes of two, four, six, eight, and twelve lines over, all in the same level, the larger bore will always be found to throw the water farthest.

It may be of use here to add Mr Mariotte's proportions of the bores of the adjutages and pipes of conduct, who was very conversant in these things, and hath written very well on this subject.

N. B. The French divide their inch into 12 equal parts, which they call *lines*.

Heights of Reservoirs.	Diameters of fit Adjutages.	Diameter of the Pipes of Conduct.
FEET.	LINES.	LINES.
5	3, 4, 5, or 6	21
10	4, 5, or 6	25 INCHES.
15	5, or 6	27, or $2\frac{1}{2}$
20	6, or half an inch	30, or $2\frac{1}{2}$
25	Ditto	33, or $2\frac{1}{2}$
30	Ditto	36, or 3
40	7, or 8	51, or $4\frac{1}{2}$
50	8, or 10	65, or $5\frac{1}{2}$
60	10, or 12	72, or 6
80	12, or 14	84, or 7
100	12, 14, or 15	96, or 8

Hence it may be remarked, that there is a certain and fit proportion to be observed between the adjutage

whereby the jet is delivered, and the pipe conducting it from the head. In general, *About five times the diameter of the adjutage for jets under half an inch, and six or seven times for all above, will fire the pipes of conduct pretty well:* not but it will always be an error on the right side, to have them rather larger than in strictness they ought to be, that the jet may always be freely supplied with water, and in due time.

For a like reason, if there be occasion for a cock to be placed in any part of the pipe of conduct, particular care must be taken that it should be there bigger in proportion, that the water-way may not be pinched; but that the cavity be left at least equal to the bore of the rest of the pipe.

The bore of an adjutage cannot be too smooth or true. Those that are cylindrical are best; those that are bored conical worst, because of the reflections of the water from the inclined sides of the machine, which in the hurry of the issuing stream will in them unavoidably be made.

When fluids are designed to be raised higher than the springs from whence they flow, forcing engines must be used; of which and other hydraulic machines, we come now to give a particular account.

SECT. V. Hydraulic Engines.

THE pump is at once the most common and most useful of all the hydraulic instruments. It was first invented by Ctesebes, a mathematician of Alexandria, 120 B. C.; when the air's pressure came afterwards to be known, it was much improved, and it is now brought to a great degree of perfection.

Ctesebes's pump acted both by suction and pulsion; and its structure and action are as follow:—A brass cylinder ABCD, furnished with a valve in L, is placed in the water. 2. In this is fitted the embulus MK, made of green wood, which will not swell in the water, and adjusted to the aperture of the cylinder with a covering of leather, but without any valve. In H is fitted on another tube NH, with a valve that opens upwards in I. Now, the embulus EK being raised, the water opens the valve in L, and rises into the cavity of the cylinder:—and when the same embulus is again depressed, the valve I is opened, and the water-driven up through the tube HN. This is the pump used among the ancients, and that from which the others afterwards are deduced. Sir S. Morland has endeavoured to increase its force by lessening the friction; which he has done to good effect, inasmuch as to make it work without almost any friction at all.

Of this pump as now used there are simply three kinds, viz. the sucking, the forcing, and the lifting-pump. By the two last, water may be raised to any height, with an adequate apparatus and sufficient power: by the former it may, by the general pressure of the atmosphere on the surface of the well-water, be raised no more than 33 feet, as was before hinted, though in practice it is seldom applied to the raising it much above 28; because from the variations observed on the barometer, it is apprehended that the air may, on certain occasions, be something lighter than 33 feet of water; and whenever that shall happen, for want of the due counterpoise, this pump may fail in its performance.

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Of pumps

Plate CCXLIII. fig. 15.

The

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The com-
mon pump.Plate
CCXLI.
fig. 3.

The *common sucking-pump*, with which we draw water out of wells, is an engine both pneumatic and hydraulic. It consists of a pipe open at both ends, in which is a moveable piston, bucket, or sucker, as big as the bore of the pipe in that part wherein it works; and is leathered round, so as to fit the bore exactly; and may be moved up and down, without suffering any air to come between it and the pipe or pump-barrel.

We shall explain the construction of this and the forcing-pump by pictures of glass models, in which both the action of the pistons and motion of the valves are seen.

Hold the model DCBL upright in the vessel of water K, the water being deep enough to rise at least as high as from A to I. The valve *a* on the moveable bucket G, and the valve *b* on the fixed box H (which box quite fills the bore of the pipe or barrel at H), will each lie close, by its own weight, upon the hole in the bucket and box, until the engine begins to work. The valves are made of brass, and covered underneath with leather for closing the holes the more exactly: and the bucket G is raised and depressed alternately by the handle E and rod D*d*, the bucket being supported at B before the working begins.

Take hold of the handle E, and thereby draw up the bucket from B to C, which will make room for the air in the pump all the way below the bucket to dilate itself, by which its spring is weakened, and then its force is not equivalent to the weight or pressure of the outward air upon the water in the vessel K: and therefore, at the first stroke, the outward air will press up the water through the notched foot A, into the lower pipe, about as far as *e*: this will condense the rarefied air in the pipe between *e* and C to the same state it was in before; and then, as its spring within the pipe is equal to the force or pressure of the outward air, the water will rise no higher by the first stroke; and the valve *b*, which was raised a little by the dilation of the air in the pipe, will fall, and stop the hole in the box H; and the surface of the water will stand at *e*. Then depress the piston or bucket from C to B; and as the air in the part B cannot get back again through the valve *b*, it will (as the bucket descends) raise the valve *a*, and so make its way through the upper part of the barrel *d* into the open air. But upon raising the bucket G a second time, the air between it and the water in the lower pipe at *a* will be again left at liberty to fill a larger space; and so its spring being again weakened, the pressure of the outward air on the water in the vessel K will force more water up into the lower pipe from *e* to *f*; and when the bucket is at its greatest height C, the lower valve *b* will fall, and stop the hole in the box H as before. At the next stroke of the bucket or piston, the water will rise through the box H towards B; and then the valve *b*, which was raised by it, will fall when the bucket G is at its greatest height. Upon depressing the bucket again, the water cannot be pushed back through the valve *b*, which keeps close upon the hole whilst the piston descends. And upon raising the piston again, the outward pressure of the air will force the water up through H, where it will raise the valve, and follow the bucket to C. Upon the next depression of the bucket G, it will go down into the water in the

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barrel B; and as the water cannot be driven back through the now close valve *b*, it will raise the valve *a* as the bucket descends, and will be lifted up by the bucket when it is next raised. And now, the whole space below the bucket being full, the water above it cannot sink when it is next depressed; but upon its depression, the valve *a* will rise to let the bucket go down; and when it is quite down, the valve *a* will fall by its weight, and stop the hole in the bucket. When the bucket is next raised, all the water above it will be lifted up, and begin to run off by the pipe F. And thus, by raising and depressing the bucket alternately, there is still more water raised by it; which getting above the pipe F, into the wide top I, will supply the pipe, and make it run with a continued stream.

So at every time the bucket is raised, the valve *b* rises, and the valve *a* falls; and at every time the bucket is depressed, the valve *b* falls, and *a* rises.

As it is the pressure of the air or atmosphere which causes the water to rise and follow the piston or bucket G as it is drawn up; and since a column of water 33 feet high is of equal weight with as thick a column of the atmosphere from the earth to the very top of the air; therefore, the perpendicular height of the piston or bucket from the surface of the water in the well must always be less than 33 feet; otherwise the water will never get above the bucket. But when the height is less, the pressure of the atmosphere will be greater than the weight of the water in the pump, and will therefore raise it above the bucket: and when the water has once got above the bucket, it may be lifted thereby to any height, if the rod D be made long enough, and a sufficient degree of strength be employed to raise it with the weight of the water above the bucket.

The force required to work a pump, will be as the height to which the water is raised, and as the square of the diameter of the pump-bore in that part where the piston works. So that, if two pumps be of equal heights, and one of them be twice as wide in the bore as the other, the widest will raise four times as much water as the narrowest; and will therefore require four times as much strength to work it.

The wideness or narrowness of the pump, in any other part besides that in which the piston works, does not make the pump either more or less difficult to work, except what difference may arise from the friction of the water in the bore; which is always greater in a narrow bore than in a wide one, because of the greater velocity of the water.

The pump-rod is never raised directly by such a handle as E at the top, but by means of a lever, whose longer arm (at the end of which the power is applied) generally exceeds the length of the shorter arm five or six times; and, by that means, it gives five or six times as much advantage to the power. Upon these principles, it will be easy to find the dimensions of a pump that shall work with a given force, and draw water from any given depth. But as these calculations have been generally neglected by pump-makers (either for want of skill or industry), the following table was calculated by the late ingenious Mr Booth for their benefit. In this calculation, he supposed the handle of the pump to be a lever increasing the power five times; and had often found that a man can work a pump four inches

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Fig. 7.

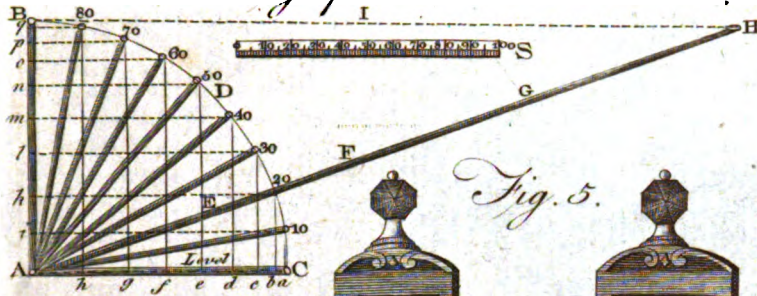


Fig. 5.

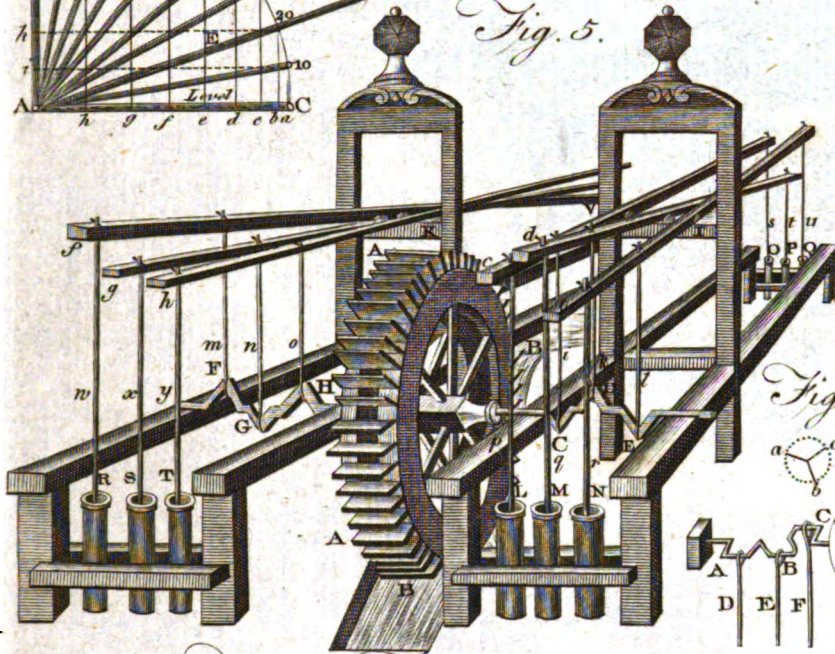


Fig. 1.

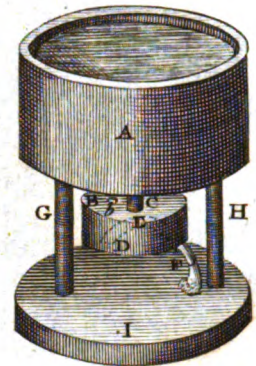


Fig. 2.

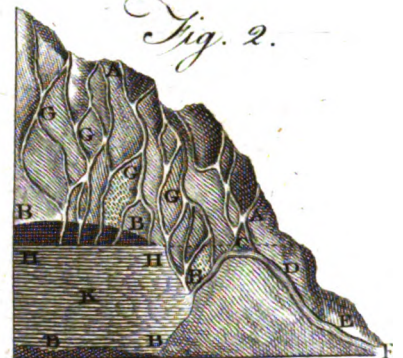


Fig. 3. Fig. 4.

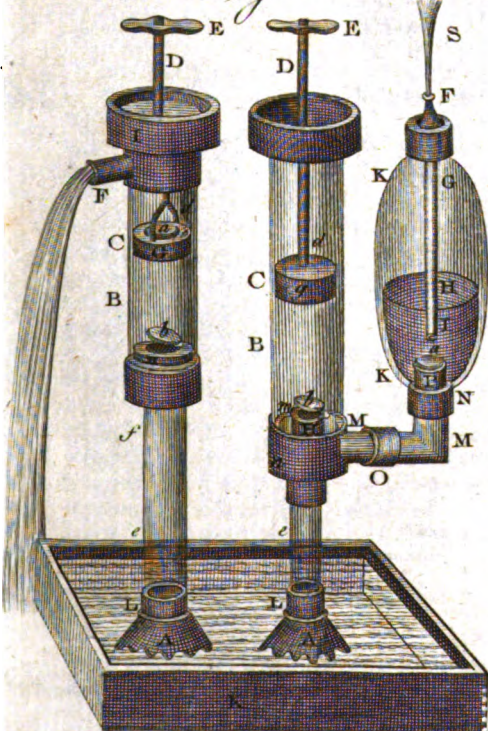
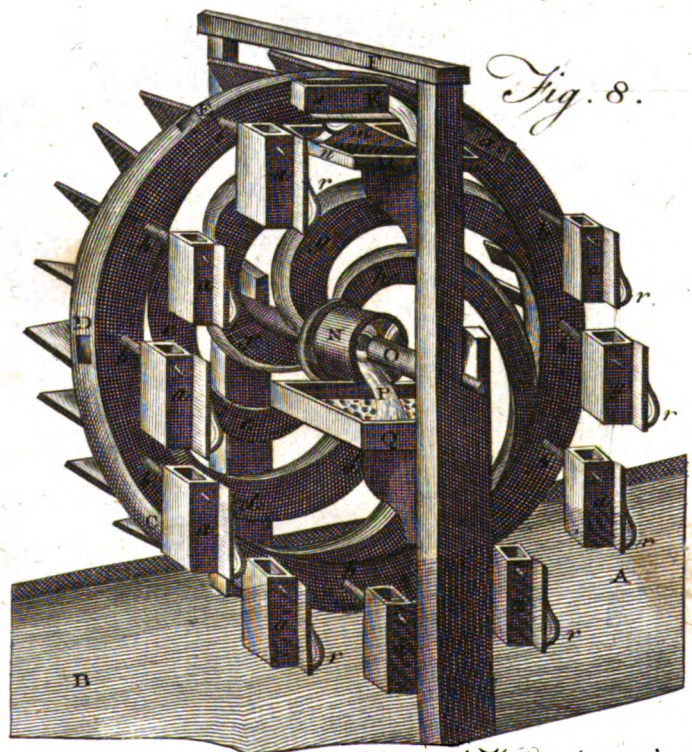


Fig. 8.



A. Bell Pin. H. A. sculptor. fecit.



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inches diameter and 30 feet high, and discharge 27½ gallons of water (English wine-measure) in a minute. Now, if it be required to find the diameter of a pump that shall raise water with the same ease from any other height above the surface of the well; look for that height in the first column, and over against it in the second you have the diameter or width of the pump, and in the third you find the quantity of water which a man of ordinary strength can discharge in a minute.

Height of the pump above the surface of the well. Feet.	Diameter of the bore where the bucket works. Inches.		Water discharged in a minute, English wine-measure.	
	100 parts.		Gallons.	Pints.
10	6	.93	81	6
15	5	.66	54	4
20	4	.90	40	7
25	4	.38	32	6
30	4	.00	27	2
35	3	.70	23	3
40	3	.46	20	3
45	3	.27	18	1
50	3	.10	16	3
55	2	.95	14	7
60	2	.84	13	5
65	2	.72	12	4
70	2	.62	11	5
75	2	.53	10	7
80	2	.45	10	2
85	2	.38	9	5
90	2	.31	9	1
95	2	.25	8	5
100	2	.19	8	1

³⁰
The forcing pump. Plate CCXLI. fig. 4.

The forcing-pump raises water through the box H in the same manner as the sucking-pump does, when the plunger or piston *g* is lifted up by the rod *D*. But this plunger has no hole through it, to let the water in the barrel BC get above it, when it is depressed to B, and the valve *b* (which rose by the ascent of the water through the box H when the plunger *g* was drawn up) falls down and stops the hole in H, the moment that the plunger is raised to its greatest height. Therefore, as the water between the plunger *g* and box H can neither get through the plunger upon its descent, nor back again into the lower part of the pump L*c*, but has a free passage by the cavity around H into the pipe MM, which opens into the air-vessel KK at P; the water is forced through the pipe MM by the descent of the plunger, and driven into the air-vessel; and in running up through the pipe at P, it opens the valve *a*; which shuts at the moment the plunger begins to be raised, because the action of the water against the under side of the valve then ceases.

The water, being thus forced into the air-vessel KK by repeated strokes of the plunger, gets above the lower end of the pipe GHI, and then begins to condense the air in the vessel KK. For, as the pipe GH

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is fixed air-tight into the vessel below F, and the air has no way to get out of the vessel but through the mouth of the pipe at I, and cannot get out when the mouth I is covered with water, and is more and more condensed as the water rises upon the pipe, the air then begins to act forcibly by its spring against the surface of the water at H: and this action drives the water up through the pipe IHGF, from whence it spouts in a jet S to a great height; and is supplied by alternately raising and depressing of the plunger *g*, which constantly forces the water that it raises through the valve H, along the pipe MM, into the air-vessel KK.

The higher that the surface of the water H is raised in the air-vessel, the less space will the air be condensed into which before filled that vessel; and therefore the force of its spring will be so much the stronger upon the water, and will drive it with the greater force through the pipe at F: and as the spring of the air continues whilst the plunger *g* is rising, the stream or jet S will be uniform, as long as the action of the plunger continues; and when the valve *b* opens, to let the water follow the plunger upward, the valve *a* shuts, to hinder the water, which is forced into the air-vessel, from running back by the pipe MM into the barrel of the pump.

If there was no air-vessel to this engine, the pipe GHI would be joined to the pipe MMN at P; and then the jet S would stop every time the plunger is raised, and run only when the plunger is depressed.

Of lifting-pumps there are several sorts; the most common is thus constructed. AB is the barrel, fixed in the frame KILM; which is also fixed immoveable, with the lower part in the water that is to be pumped up. GEQHO is a frame with two strong iron rods, moveable through holes in the upper and lower parts of the pump, IK and LM. In the bottom of this frame is fixed an inverted piston BD, with its bucket and valve uppermost at D. From the top of the barrel there goes off a part KH, either fixed to the barrel, or moveable by a ball and socket (as here represented at F); but in either case so very exact and tight, that no water or air can possibly get into the barrel, as that would prevent the effect of the pump. In this part, at C, is fixed a valve opening upward.

When the piston frame is thrust down into the water, the piston D will descend, and the water beneath it rush up through the valve at D, and get above the piston; where, upon the frame's being lifted up, the piston will force the water through the valve C, into the cistern P, there to run off by the spout. It is to be remembered, that this sort of pump must be set so far in the water, that the piston may play below its surface. It appears by the above description, that this is only a different manner of constructing a forcing-pump.

By means of forcing-pumps, water may be raised to any height above the level of a river or spring; and machines may be contrived to work these pumps, either by a running stream, a fall of water, or by horses. An instance in each sort will be sufficient to show the method.

1. By a running stream, or a fall of water. Let Plate AA be a wheel, turned by the fall of water BB; and have

4 C

³¹
The lifting pump. Plate CCXXXIX. fig. 13.

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A pump-
engine to
go by wa-
ter.

have any number of cranks (suppose six) as C, D, E, F, G, H, on its axis, according to the strength of the fall of water, and the height to which the water is intended to be raised by the engine. As the wheel turns round, these cranks move the levers, *c, d, e, f, g, h*, up and down, by the iron rods *i, k, l, m, n, o*; which alternately raise and depress the pistons by the other iron rods *p, q, r, s, t, u, w, x, y*, in 12 pumps; nine whereof, as L, M, N, O, P, Q, R, S, T, appear in the plate; the other three being hid behind the work at V. And as pipes may go from all these pumps, to convey the water (drawn up by them to a small height) into a close cistern, from which the main pipe proceeds, the water will be forced into this cistern by the descent of the pistons. And as each pipe, going from its respective pump into the cistern, has a valve at its end in the cistern, these valves will hinder the return of the water by the pipes; and therefore, when the cistern is once full, each piston upon its descent will force the water (conveyed into the cistern by a former stroke) up the main pipe, to the height the engine was intended to raise it: which height depends upon the quantity raised, and the power that turns the wheel. When the power upon the wheel is lessened by any defect of the quantity of water turning it, a proportionable number of the pumps may be laid aside, by disengaging their rods from the vibrating levers.

This figure is a representation of the engine erected at Blenheim for the duke of Marlborough, by the late ingenious Mr Alderica. The water-wheel is $7\frac{1}{2}$ feet in diameter, according to Mr Switzer's account in his *Hydraulics*.

When such a machine is placed in a stream that runs upon a small declivity, the motion of the levers and action of the pumps will be but slow; since the wheel must go once round for each stroke of the pumps. But when there is a large body of slow running water, a cog or spur-wheel may be placed upon each side of the water-wheel AA, upon its axis, to turn a trundle upon each side; the cranks being upon the axis of the trundle. And by proportioning the cog-wheels to the trundles, the motion of the pumps may be made quicker, according to the quantity and strength of the water upon the first wheel; which may be as great as the workman pleases, according to the length and breadth of the float-boards or wings of the wheel. In the same manner the engine for raising water at London-Bridge is constructed.

The wheels of the London-bridge water-works are placed under the arches of the bridge, and moved by the common stream of the tide-water of the river. A B the axle-tree of the water-wheel is nineteen feet long, and three feet in diameter; in which C, D, E, F, are four sets of arms, eight in each place, on which are fixed G G G G, four sets or rings of fellows twenty feet in diameter, and the floats H H H fourteen feet long, and eighteen inches deep, being about twenty-six in number. The wheel lies with its two gudgeons, or centre pins, A, B, upon two brasses in the pieces M N, which are two great levers, whose fulcrum or prop is an arched piece of timber L; the levers being made circular on their lower sides to an arch of the radius M O, and kept in their places by two arching studs fixed in the stock L, through two mortises in the lever M N. The wheel is by these levers made to rise and fall with the tide in the following

manner. The levers M N are sixteen feet long; from M the fulcrum of the lever to O the gudgeon of the water-wheel, six feet; and from O to the arch at N, ten feet. To the bottom of the arch N is fixed a strong triple chain P, made after the fashion of a watch-chain, but the links arched to a circle of one foot diameter, having notches or teeth to take hold of the leaves of a pinion of cast iron Q, ten inches diameter, with eight teeth in it moving on an axis. The other loose end of this chain has a large weight hanging at it to help to counterpoise the wheel, and preserve the chain from sliding on the pinion. On the same axis is fixed a cog-wheel R, six feet diameter, with forty-eight cogs. To this is applied a trundle, or pinion S of six rounds or teeth; and upon the same axis is fixed T, a cog-wheel of fifty-one cogs, into which the trundle V of six rounds works, on whose axis is a winch or windlass W, by which one man with the two windlasses raises or lets down the wheel as there is occasion. And because the fulcrums of these levers M N are in the axis of the trundle K, viz. at M or X, in what situation soever the wheel is raised or let down, the cog-wheel I, I, is always equidistant from M, and works or geers truly. By means of this machine the strength of an ordinary man will raise about fifty ton weight.

I, I, is a cog-wheel fixed near the end of the great axis eight feet diameter, and forty-four cogs working into a trundle K, of four feet and an half diameter, and twenty rounds, whose axis or spindle is of cast iron four inches in diameter, lying in brasses at each end as at X. ZZ is a quadruple crank of cast iron, the metal being six inches square, each of the necks being turned one foot from the centre, which is fixed in brasses at each end in two headstocks fastened down by caps. One end of this crank at Y is placed close abutting to the end of the axle-tree X, where they are at those ends six inches diameter, each having a slit in the ends where an iron wedge is put one half into the end X, the other half into Y, by means of which the axis X turns about the crank ZZ. The four necks of the crank have each an iron spear or rod fixed at their upper ends to the respective libra or lever, *a 1, 2, 3, 4*, within three feet at the end. These levers are twenty-four feet long, moving on centres in the frame *b b b b*; at the end of which, at *c 1, 2, 3, 4*, are jointed four rods with their forcing plugs working into *d 1, 2, 3, 4*, four cast iron cylinders four feet three quarters long, seven inches bore above and nine below where the valves lie, fastened by screwed flanches over the four holes of a hollow trunk of cast iron, having four valves in it just over *e e e e*, at the joining on of the bottom of the barrels or cylinders, and at one end a sucking pipe and grate *f* going into the water, which supplies all the four cylinders alternately.

From the lower part of the cylinders *d 1, d 2, d 3, d 4*, come out necks turning upward arch-wise, as *g g g g*, whose upper parts are cast with flanches to screw up to the trunk *b b b b*; which necks have bores of seven inches diameter, and holes in the trunk above communicating with them, at which joining are placed four valves. The trunk is cast with four bosses or protuberances standing out against the valves to give room for their opening and shutting; and on the upper side are four holes stopped with plugs to take out on occasion to cleanse the valves. One end of this trunk is

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Fig. 7.

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stopped by a plug *i*. To the other iron pipes are joined as *i* 2, by flanches, through which the water is forced up to any height or place required.

Besides these four forcers there are four more placed at the other ends of the libraz, or levers (not shown here to avoid confusion, but to be seen on the left hand), the rods being fixed at *a* 1, 2, 3, 4, working in four such cylinders, with their parts *d d*, &c. *e e*, *f f*, *g g*, and *i*, as before described, standing near *k k*.

At the other end of the wheel (at *B*) is placed all the same sort of work as at the end *A* is described, viz.

The cog-wheel I.	The four levers <i>a c</i> , <i>a c</i> , &c.
The trundle K.	8 forcing rods <i>a d</i> , <i>a d</i> , &c.
The spindle X.	8 Cylinders <i>d e</i> , <i>d e</i> , &c.
The crank Y, Z.	4 Trunks such as <i>e e</i> , <i>b b</i> .
The sucking pipes <i>f</i> .	2 Forcing pipes as <i>i</i> .

So that one single wheel works 16 pumps.

All which work could not be drawn in one perspective view without making it very much confused.

Mr Beighton, who has described the structure and operation of this engine (see Phil. Trans. abr. vol. vi. p. 358.) has calculated the quantity of water raised by it in a given time. In the first arch next the city there is one wheel with double work of sixteen forcers; and in the third arch one wheel with double work at one end and single at the other, having twelve forcers; a second wheel in the middle having eight forcers, and a third wheel with sixteen: so that there are in all fifty-two forcers; one revolution of a wheel produces in every forcer $2\frac{1}{2}$ strokes; so that one turn of the four wheels makes 114 strokes. When the river acts with most advantage, the wheels go six times round in a minute, and but $4\frac{1}{2}$ at middle water: hence the number of strokes in a minute is 684; and as the stroke is $2\frac{1}{2}$ feet in a seven-inch bore, it raises three ale gallons; and all raise per minute 2052 ale gallons; i. e. 123120 gallons = 1954 hogsheds per hour, and at the rate of 46896 hogsheds in a day, to the height of 120 feet. Such is the utmost quantity they can raise, supposing that there were no imperfections or loss at all; but Mr Beighton infers, from experiments performed on engines whose parts were large and excellently constructed, that they will lose one fifth and sometimes one fourth of the calculated quantity. For an estimate of the power by which the wheels are moved, see Phil. Trans. ubi supra.

Mr Beighton observes, that though these water-works may justly be esteemed as good as any in Europe, yet some things might be altered much for the better. If (he says), instead of sixteen forcers, they worked only eight, the stroke might be five feet in each forcer, which would draw much more water with the same power in the wheel; because much water is lost by the two frequent opening and shutting of the valves; and that the bores that carry off the water from the forcers are too small; and that they should be near nine inches in diameter. This objection Dr Defaguliers says is of no force, unless the velocity of the pistons was very great; but here the velocity of the water passing through the bores is much less than two feet in a second. This last writer observes, that a triple crank distributes the power better than a quadruple one. He adds, that forcers made with thin leather tanned, of about the thickness of the upper-leather of a countryman's shoe, would be much better than those

of the stiff leather commonly used. Dr Defaguliers has formed a comparison of the powers of this engine with those of the famous machine at Marly. Estimating the quantity of water merely raised by these machines, the former raises almost twice and a quarter as much as the latter; but considering that the London bridge water-works raise this water but 120 feet high, and that the Marly engine raises its water 533 feet high, he deduces from a calculation formed on these different heights, and on the difference of the fall of water on both engines, this conclusion, viz. that the effect of the four wheels at London-bridge is three times greater than that of four of the wheels at Marly.

The engine at London-bridge was put up by Mr Sorocold towards the beginning of this century: the contrivance for raising and falling the water-wheel was the invention of Mr Hadley, who put up the first of that kind at Worcester, for which he obtained a patent.

ABCD is a wheel turned by water according to the order of the letters. On the horizontal axis are four small wheels, toothed almost half round; and the parts of their edges on which there are no teeth are cut down so as to be even with the bottoms of the teeth where they stand.

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A quadruple pump-mill, for raising water.
Plate CCXXXIX, fig. 1.

The teeth of these four wheels take alternately into the teeth of four racks, which hang by two chains over the pullies *Q* and *L*; and to the lower ends of these racks there are four iron rods fixed, which go down into the four forcing-pumps, *S*, *R*, *M*, and *N*. And, as the wheels turn, the racks and pump-rods are alternately moved up and down.

Thus suppose the wheel *G* has pulled down the rack *I*, and drawn up the rack *K* by the chain: as the last tooth of *G* just leaves the uppermost tooth of *I*, the first tooth of *H* is ready to take into the lowermost tooth of the rack *K*, and pull it down as far as the teeth go; and then the rack *I* is pulled upward thro' the whole space of its teeth, and the wheel *G* is ready to take hold of it, and pull it down again, and so draw up the other.—In the same manner, the wheels *E* and *F* work the racks *O* and *P*.

These four wheels are fixed on the axle of the great wheel in such a manner, with respect to the positions of their teeth, that, whilst they continue turning round, there is never one instant of time in which one or other of the pump-rods is not going down and forcing the water. So that, in this engine, there is no occasion for having a general air-vessel to all the pumps, to procure a constant stream of water flowing from the upper end of the main pipe.

From each of these pumps, near the lowest end, in the water, there goes off a pipe, with a valve on its farthest end from the pump; and these ends of the pipes all enter one close box, into which they deliver the water: and into this box the lower end of the main conduct-pipe is fixed. So that, as the water is forced or pushed into the box, it is also pushed up the main pipe to the height that it is intended to be raised.

2. Where a stream or fall of water cannot be had, and gentlemen want to have water raised, and brought to their houses from a rivulet or spring; this may be effected by a horse-engine, working three forcing-pumps,

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A pump-engine to go by horses.

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fig. 6.

pumps which stand in a reservoir filled by the spring or rivulet: the pistons being moved up and down in the pumps by means of a triple crank ABC, which, as it is turned round by the trundle G, raises and depresses the rods D, E, F. If the wheel has three times as many cogs as the trundle has flaves or rounds, the trundle and cranks will make three revolutions for every one of the wheel: and as each crank will fetch a stroke in the time it goes round, the three cranks will make nine strokes for every turn of the great wheel.

The cranks should be made of cast iron, because that will not bend; and they should each make an angle of 120 with both of the others, as at *a, b, c*; which is (as it were) a view of their *radii* in looking endwise at the axis: and then there will be always one or other of them going downward, which will push the water forward with a continued stream into the main pipe. For when *b* is almost at its lowest situation, and is therefore just beginning to lose its action upon the piston which it moves, *c* is beginning to move downward, which will by its piston continue the propelling force upon the water: and when *c* is come down to the position of *b*, *a* will be in the position of *c*.

The more perpendicularly the piston rods move up and down in the pumps, the freer and better will their strokes be: but a little deviation from the perpendicular will not be material. Therefore, when the pump-rods D, E, and F, go down into a deep well, they may be moved directly by the cranks, as is done in a very good horse-engine of this sort at the late Sir James Creed's at Greenwich, which forces up water about 64 feet from a well under ground, to a reservoir on the top of his house. But when the cranks are only at a small height above the pumps, the pistons must be moved by vibrating levers, as in the above engine at Bleenheim: and the longer the levers are, the nearer will the strokes be to a perpendicular.

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A calculation of the quantity of water that may be raised by a horse engine.

Let us suppose, that in such an engine as Sir James Creed's, the great wheel is 12 feet diameter, the trundle 4 feet, and the radius or length of each crank 9 inches, working a piston in its pump. Let there be three pumps in all, and the bore of each pump be four inches diameter. Then, if the great wheel has three times as many cogs as the trundle has flaves, the trundle and cranks will go three times round for each revolution of the horse and wheel, and the three cranks will make nine strokes of the pumps in that time, each stroke being 18 inches (or double the length of the crank) in a four-inch bore. Let the diameter of the horse-wheel be 18 feet, and the perpendicular height to which the water is raised above the surface of the well be 64 feet.

If the horses go at the rate of two miles an hour (which is very moderate walking) they will turn the great wheel 187 times round in an hour.

In each turn of the wheel the pistons make nine strokes in the pumps, which amount to 1683 in an hour.

Each stroke raises a column of water 18 inches long: and four inches thick, in the pump-barrels; which column, upon the descent of the piston, is forced into the main pipe, whose perpendicular altitude above the surface of the well is 64 feet.

Now, since a column of water 18 inches long, and Hydraulic 4 inches thick, contains 26.18 cubic inches, this Engine. number multiplied by 1683 (the strokes in an hour) gives 380661 for the number of cubic inches of water raised in an hour.

A gallon, in wine-measure, contains 231 cubic inches, by which divide 380661, and it quotes 1468 in round numbers, for the number of gallons raised in an hour; which, divided by 63, gives 26½ hogheads. If the horses go faster, the quantity raised will be so much the greater.

In this calculation it is supposed that no water is wasted by the engine. But as no forcing engine can be supposed to lose less than a fifth part of the calculated quantity of water, between the pistons and barrels, and by the opening and shutting of the valves, the horses ought to walk almost 2½ miles per hour to fetch up this loss.

A column of water 4 inches thick and 64 feet high, weighs 349½ pounds avoirdupois, or 424½ pounds troy; and this weight, together with the friction of the engine, is the resistance that must be overcome by the strength of the horses.

The horse-tackle should be so contrived, that the horses may rather push on than drag the levers after them. For, if they draw, in going round the walk, the outside leather-straps will rub against their sides and hams; which will hinder them from drawing at right angles to the levers, and so make them pull at a disadvantage. But if they push the levers before their breasts, instead of dragging them, they can always walk at right angles to these levers.

It is no ways material what the diameter of the main or conduct pipe be: for the whole resistance of the water therein against the horses will be according to the height to which it is raised, and the diameter of that part of the pump in which the piston works, as we have already observed. So that by the same pump, an equal quantity of water may be raised in (and consequently made to run from) a pipe of a foot diameter, with the same ease as in a pipe of five or six inches: or rather with more ease, because its velocity in a large pipe will be less than in a small one, and therefore its friction against the sides of the pipe will be less also.

And the force required to raise water depends not upon the length of the pipe, but upon the perpendicular height to which it is raised therein above the level of the spring. So that the same force, which would raise water to the height AB in the upright pipe Aiklmnopq.B, will raise it to the same height or level BHI in the oblique pipe AEFGH. For the pressure of the water at the end A of the latter is no more than its pressure against the end A of the former.

The weight or pressure of water at the lower end of the pipe, is always as the sine of the angle to which the pipe is elevated above the level parallel to the horizon. For although the water in the upright pipe AB would require a force applied immediately to the lower end A equal to the weight of all the water in it, to support the water, and a little more to drive it up and out of the pipe; yet, if that pipe be inclined from its upright position to an angle of 80 degrees (as in A. 80), the force required to support or to raise

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fig. 7.

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raise the same cylinder of water will then be as much less as the sine $80\ b$ is less than the radius AB ; or as the sine of 80 degrees is less than the sine of 90 . And so, decreasing as the sine of the angle of elevation lessens, until it arrives at its level AC or place of rest, where the force of the water is nothing at either end of the pipe. For although the absolute weight of the water is the same in all positions, yet its pressure at the lower end decreases as the sine of the angle of elevation decreases; as will appear plainly by a farther consideration of the figure.

Let two pipes AB and AC , of equal lengths and bores, join each other at A ; and let the pipe AB be divided into 100 equal parts, as the scale S is; whose length is equal to the length of the pipe.—Upon this length, as a radius, describe the quadrant BDC , and divide it into 90 equal parts or degrees.

Let the pipe AC be elevated to 10 degrees upon the quadrant, and filled with water: then, part of the water that is in it will rise in the pipe AB ; and if it be kept full of water, it will raise the water in the pipe AB from A to i ; that is, to a level i 10 with the mouth of the pipe at 10: and the upright line a 10, equal to Ai , will be the sine of 10 degrees elevation; which being measured upon the scale S , will be about 17.4 of such parts as the pipe contains 100 in length: and therefore, the force or pressure of the water at A , in the pipe A 10, will be to the force or pressure at A in the pipe AB , as 17.3 to 100.

Let the same pipe be elevated to 20 degrees in the quadrant; and if it be kept full of water, part of that water will run into the pipe AB , and rise therein to the height Ak , which is equal to the length of the upright line b 20, or to the sine of 20 degrees elevation; which, being measured upon the scale S , will be 34.2 of such parts as the pipe contains 100 in length. And therefore, the pressure of the water at A , in the full pipe A 20, will be to its pressure, if that pipe were raised to the perpendicular situation AB , as 34.2 to 100.

Elevate the pipe to the position A 30 on the quadrant, and if it be supplied with water, the water will rise from it, into the pipe AB , to the height Al , or to the same level with the mouth of the pipe at 30. The sine of this elevation, or of the angle of 30 degrees, is c 30; which is just equal to half the length of the pipe, or to 50 of such parts of the scale as the length of the pipe contains 100. Therefore, the pressure of the water at A , in a pipe elevated 30 degrees above the horizontal level, will be equal to one half of what it would be if the same pipe stood upright in the situation AB .

And thus, by elevating the pipe to 40, 50, 60, 70, and 80 degrees on the quadrant, the sines of these elevations will be d 40, e 50, f 60, g 70, and h 80; which will be equal to the heights Am , An , AO , Ap , and Aq ; and these heights measured upon the scale S will be 64.3, 76.6, 86.6, 94.0, and 98.5; which express the pressures at A in all these elevations, considering the pressure in the upright pipe AB as 100.

Sine of	Parts	Sine of	Parts	Sine of	Parts
D. 1	17	D. 31	515	61	875
2	35	32	530	62	883
3	52	33	545	63	891
4	70	34	559	64	899
5	87	35	573	65	906
6	104	36	588	66	913
7	122	37	602	67	920
8	139	38	616	68	927
9	156	39	629	69	934
10	174	40	643	70	940
11	191	41	656	71	945
12	208	42	669	72	951
13	225	43	682	73	956
14	242	44	695	74	961
15	259	45	707	75	966
16	276	46	719	76	970
17	292	47	731	77	974
18	309	48	743	78	978
19	325	49	755	79	982
20	342	50	766	80	985
21	358	51	777	81	988
22	375	52	788	82	990
23	391	53	799	83	992
24	407	54	809	84	994
25	423	55	819	85	996
26	438	56	829	86	997
27	454	57	839	87	998
28	469	58	848	88	999
29	485	59	857	89	1000
30	500	60	866	90	1000

Because it may be of use to have the lengths of all the sines of a quadrant from 0 degrees to 90, we have given the foregoing Table, showing the length of the sine of every degree in such parts as the whole pipe (equal to the radius of the quadrant) contains 1000. Then the sines will be integral or whole parts in length. But if you suppose the length of the pipe to be divided only into 100 equal parts, the last figure of each part or sine must be cut off as a decimal; and then those which remain at the left hand of this separation will be integral or whole parts.

Thus, if the radius of the quadrant (supposed to be equal to the length of the pipe AC) be divided into 1000 equal parts, and the elevation be 45 degrees, the sine of that elevation will be equal to 707 of these parts: but if the radius be divided only into 100 equal parts, the same sine will be only 70.7 or $70\frac{7}{10}$ of these parts. For, as 1000 is to 707, so is 100 to 70.7.

As it is of great importance to all engine-makers, to know what quantity and weight of water will be contained in an upright round pipe of a given diameter and height; so as, by knowing what weight is to be raised, they may proportion their engines to the force which they can afford to work them; we shall subjoin Tables showing the number of cubic inches of water contained in an upright pipe of a round bore, of any diameter from one inch to six and a half, and of any height from one foot to two hundred: together with the weight of the said number of cubic inches, both

is.

Hydrostatic Tables. Hydrostatic in troy and avoirdupois ounces. The number of cubic inches divided by 231, will reduce the water to gallons in wine-measure; and, divided by 282, will reduce it to the measure of ale-gallons. Also, the troy ounces divided by 12, will reduce the weight to troy pounds; and the avoirdupois ounces divided by 16, will reduce the weight to avoirdupois pounds.

And here we must repeat it again, that the weight or pressure of the water acting against the power that works the engine, must always be estimated according to the perpendicular height to which it is to be raised, without any regard to the length of the conduct-pipe, when it has an oblique position, and as if the diameter of that pipe were just equal to the diameter of that part of the pump in which the piston works. Thus, by the following Tables, the pressure of the water, against an engine whose pump is of a $4\frac{1}{2}$ inch bore, and the perpendicular height of the water in the conduct-pipe is 80 feet, will be equal to 8057.5 troy ounces, and to 8848.2 avoirdupois ounces; which makes 671.4 troy pounds, and 553 avoirdupois.

EXAMPLE. Required the number of cubic inches, and the weight of the water, in an upright pipe 278 feet high, and $1\frac{1}{2}$ inch diameter.

Feet.	Cubic inches.	Troy oz.	Avoir. oz.
200	4241.1	2238.2	2457.8
70	1484.4	783.3	860.2
8	169.6	89.5	98.3
Answ. 278	5895.1	3111.0	3416.3

Here the nearest single decimal figure is only taken into the account; and the whole being reduced by division, amounts to $25\frac{1}{2}$ wine-gallons in measure; to $259\frac{1}{2}$ pounds troy, and to $213\frac{1}{2}$ pounds avoirdupois.

These tables were at first calculated to six decimal places for the sake of exactness: but in transcribing them there are no more than two decimal figures taken into the account, and sometimes but one; because there is no necessity for computing to hundredth-parts of an inch or of an ounce in practice.

HYDROSTATIC TABLES.

Hydrostatic
Tables.

Inch diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	9.42	4.97	5.46
2	18.85	9.95	10.92
3	28.27	14.92	16.38
4	37.70	19.89	21.85
5	47.12	24.87	27.31
6	56.55	29.84	32.77
7	65.97	34.82	38.23
8	75.40	39.79	43.69
9	84.82	44.76	49.16
10	94.25	49.74	54.62
20	188.49	99.48	109.24
30	282.74	149.21	163.86
40	376.99	198.95	218.47
50	471.24	248.69	273.09
60	565.49	298.43	327.71
70	659.73	348.17	382.33
80	753.98	397.90	436.95
90	848.23	447.64	491.57
100	942.48	497.38	546.19
200	1884.96	994.76	1092.38

$1\frac{1}{2}$ Inch diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	21.21	11.19	12.29
2	42.41	22.38	24.58
3	63.62	33.57	36.87
4	84.82	44.76	49.16
5	106.03	55.95	61.45
6	127.23	67.15	73.73
7	147.44	78.34	86.02
8	169.65	89.53	98.31
9	190.85	100.72	110.60
10	212.06	111.91	122.89
20	424.12	223.82	245.78
30	636.17	335.73	368.68
40	848.23	447.64	491.57
50	1060.29	559.55	614.46
60	1272.35	671.46	737.35
70	1484.40	783.37	860.24
80	1696.46	895.28	983.14
90	1908.52	1007.19	1106.03
100	2120.58	1119.09	1228.92
200	4241.15	2238.18	2457.84

HYDRO.

HYDROSTATICAL TABLES.

2 Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	37.70	19.89	21.85
2	75.40	39.79	43.69
3	113.10	59.68	65.54
4	150.80	79.58	87.39
5	188.50	99.47	109.24
6	226.19	119.37	131.08
7	263.89	139.26	152.93
8	301.59	159.16	174.78
9	339.29	179.06	196.63
10	376.99	198.95	218.47
20	753.98	397.90	436.95
30	1130.97	596.85	655.42
40	1507.97	795.80	873.90
50	1884.96	994.75	1092.37
60	2261.95	1193.70	1310.85
70	2638.94	1392.65	1529.32
80	3015.93	1591.60	1747.80
90	3392.92	1790.56	1966.27
100	3769.91	1989.51	2184.75
200	7539.82	3979.00	4369.50

3 Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	84.8	44.76	49.16
2	169.6	89.53	98.31
3	254.5	134.29	147.47
4	339.3	179.06	196.63
5	424.1	223.82	245.78
6	508.9	268.58	294.94
7	593.7	313.35	344.10
8	678.6	358.11	393.25
9	763.4	402.87	442.41
10	848.2	447.64	491.57
20	1696.5	895.28	983.14
30	2544.7	1342.92	1474.70
40	3392.9	1790.56	1966.27
50	4241.1	2238.19	2457.84
60	5089.4	2685.83	2949.41
70	5937.6	3133.47	3440.98
80	6785.8	3581.11	3932.55
90	7634.1	4028.75	4424.12
100	8482.3	4476.39	4915.68
200	16964.6	8952.78	9831.36

2½ Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	58.90	31.08	34.14
2	117.81	62.17	68.27
3	176.71	93.26	102.41
4	235.62	124.34	136.55
5	294.52	155.43	170.68
6	353.43	186.52	204.82
7	412.33	217.60	238.96
8	471.24	248.69	273.09
9	530.14	279.77	307.23
10	589.05	310.86	341.37
20	1178.10	621.72	682.73
30	1767.15	932.58	1024.10
40	2356.20	1243.44	1365.47
50	2945.25	1554.30	1706.83
60	3534.29	1865.16	2048.20
70	4123.34	2176.02	2389.57
80	4712.39	2486.88	2730.94
90	5301.44	2797.74	3072.30
100	5890.49	3108.60	3413.67
200	11780.98	6217.20	6827.34

3½ Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	115.4	60.9	66.9
2	230.9	121.8	133.8
3	346.4	182.8	200.7
4	461.8	243.7	267.6
5	577.3	304.6	334.5
6	692.7	365.6	401.4
7	808.2	426.5	468.4
8	923.6	487.4	535.3
9	1039.1	548.3	602.2
10	1154.5	609.3	669.1
20	2309.1	1218.6	1338.2
30	3463.6	1827.9	2007.2
40	4618.1	2437.1	2676.3
50	5772.7	3046.4	3345.4
60	6927.2	3655.7	4014.5
70	8081.7	4265.0	4683.6
80	9236.3	4874.3	5352.6
90	10390.8	5483.6	6021.7
100	11545.4	6092.0	6690.8
200	23090.7	12185.7	13381.5

HYDRO.

H Y D R O S T A T I C S.

HYDROSTATICAL TABLES.

4 Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	150.8	79.6	87.4
2	301.6	159.2	174.8
3	452.4	238.7	262.2
4	603.2	318.3	349.6
5	754.0	397.9	436.9
6	904.8	477.5	524.3
7	1055.6	557.1	611.7
8	1206.4	636.6	699.1
9	1357.2	716.2	786.5
10	1508.0	795.8	873.9
20	3115.9	1591.6	1747.8
30	4523.9	2387.4	2621.7
40	6631.9	3183.2	3495.6
50	7539.8	3997.0	4369.5
60	9047.8	4774.8	5243.4
70	10555.8	5570.6	6117.3
80	12063.7	6366.4	6991.2
90	13571.7	7162.2	7865.1
100	15079.7	7958.0	8739.0
200	30159.3	15916.0	17478.0

5 Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	235.6	124.3	136.5
2	471.2	248.7	273.1
3	706.8	373.0	409.6
4	942.5	497.4	546.2
5	1178.1	621.7	682.7
6	1413.7	746.1	819.3
7	1649.3	870.4	955.8
8	1884.9	994.8	1092.4
9	2120.6	1119.1	1228.9
10	2356.2	1243.4	1365.5
20	4712.4	2486.9	2730.9
30	7068.6	3730.3	4096.4
40	9424.8	4973.8	5461.9
50	11780.0	6217.2	6827.3
60	14137.2	7460.6	8192.6
70	16493.4	8704.1	9558.3
80	18849.6	9947.5	10923.7
90	21205.8	11191.0	12289.2
100	23562.0	12434.4	13654.7
200	47124.0	24868.8	27309.3

4½ Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	190.8	100.7	110.6
2	381.7	201.4	221.2
3	572.6	302.2	331.8
4	763.4	402.9	442.4
5	954.3	503.6	453.0
6	1145.1	604.3	663.6
7	1337.9	705.0	774.2
8	1526.8	805.7	884.8
9	1717.7	906.5	995.4
10	1908.5	1007.2	1106.0
20	3817.0	2014.4	2212.1
30	5725.6	3021.6	3318.1
40	7634.1	4028.7	4424.1
50	9542.6	5035.9	5530.1
60	11451.1	6043.1	6636.2
70	13359.6	7050.3	7742.2
80	15268.2	8057.5	8848.2
90	17176.7	9064.7	9954.3
100	19085.2	10071.9	11060.3
200	38170.4	20143.8	22120.6

5½ Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	285.1	150.5	164.3
2	570.2	300.9	328.3
3	855.3	451.4	492.8
4	1140.4	601.8	657.1
5	1425.5	752.3	821.3
6	1710.6	902.7	985.6
7	1995.7	1053.2	1149.9
8	2280.8	1203.6	1314.2
9	2565.9	1354.1	1478.4
10	2851.0	1504.6	1642.7
20	5702.0	3009.1	3285.4
30	8553.0	4513.7	4928.1
40	11404.0	6018.2	6570.8
50	14255.0	7522.8	8213.5
60	17106.0	9027.4	9856.2
70	19957.0	10531.9	11498.9
80	22808.0	12036.5	13141.6
90	25659.0	13541.1	14784.3
100	28510.0	15045.6	16426.9
200	57020.0	30091.2	32853.9

HYDROSTATIC TABLES.

6 Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	339.3	179.0	196.6
2	678.6	358.1	393.3
3	1017.9	537.2	589.9
4	1357.2	716.2	786.5
5	1696.5	895.3	983.1
6	2035.7	1074.3	1179.8
7	2375.0	1253.4	1376.4
8	2714.3	1432.4	1573.0
9	3053.6	1611.5	1769.6
10	3392.9	1790.6	1966.3
20	6785.8	3581.1	3932.5
30	10178.8	5371.7	5898.8
40	13571.7	7162.2	7865.1
50	16964.6	8952.8	9831.4
60	20357.5	10743.3	11797.6
70	23750.5	12533.9	13763.9
80	27143.4	14324.4	15730.2
90	30536.3	16115.0	17696.5
100	33929.2	17905.6	19662.7
200	67858.4	35811.2	39325.4

6½ Inches diameter.			
Feet high.	Solidity in cubic inches.	Weight in troy ounces.	In avoirdupois ounces.
1	398.2	210.1	230.7
2	797.4	420.3	461.4
3	1195.6	630.4	692.1
4	1593.8	840.6	922.8
5	1991.9	1050.8	1153.6
6	2390.1	1260.9	1384.3
7	2788.3	1471.1	1615.0
8	3186.5	1681.2	1845.7
9	3584.7	1891.3	2076.4
10	3982.9	2101.5	2307.1
20	7965.8	4202.9	4614.3
30	11948.8	6304.4	6921.4
40	15931.7	8405.9	9228.6
50	19914.6	10507.4	11535.7
60	23897.6	12608.9	13842.9
70	27880.5	14710.4	16150.0
80	31863.4	16811.8	18457.2
90	35846.3	18913.3	20764.3
100	39829.3	21014.8	23071.5
200	79658.6	42029.6	46143.0

Under the article *STEAM-Engine*, the reader will find a particular account of that useful invention, with a correct description and plate of it in its improved state.

THE multiplying machine, has no dependence on the action of the atmosphere; but, by the weight of water only, and without pump-work of any kind, raises water sufficient to serve a gentleman's seat, with an overplus for fountains, fish-ponds, &c.

AB are two copper pans or buckets of unequal weight and size, suspended to chains, which alternately wind off and on the multiplying-wheel YZ; whereof the wheel Y is smaller in diameter, and Z larger, in proportion to the different lifts each is designed to perform.

When the buckets are empty, they are stopped level with the spring at X, whence they are both filled with water in the same time.

The greater of the two, A, being the heavier when full, preponderates and descends ten feet, perhaps from C to D; and the lesser, B, depending on the same axis, is thereby weighed up or raised from E to F, suppose 30 feet.

Here, by particular little contrivances, opening the valves placed at bottom of each of these buckets, they both discharge their water in the same time, through apertures proportionable to their capacities; the smaller into the cistern W, whence it is conveyed for service by the pipe T, and the larger at D, to run waste by the drain below at H. The bucket B being empty, is so adjusted as then to overweigh; and descending steadily as it rose betwixt the guiding rods VV, brings or weighs up A to its former level at X, where both being again replenished from the spring, they thence proceed as before. And thus will they continue constantly moving (merely by their circumstantial difference of water-weight, and without any other assistance than that of sometimes giving the iron-work a little oil) so long as the materials shall last, or the spring supply water.

The steadiness of the motion is in part regulated by a worm turning a jack-fly, and a little simple wheel-work at LM; which communicating with the multiplying wheel axle at M, is thereby moved forward or backward as the buckets either rise or descend. But what principally keeps the whole movement steady, is the equilibrium preserved in the whole operation by a certain weight of lead, at the end of a lever of fit length, and fixed on one of the spindles of the wheel-work, the numbers whereof are so calculated as, during the whole performance up and down, to let it move no more than one-fourth of a circle, from G to K; by which contrivance, as more or less of the chains suspending the buckets come to be wound off their respective wheels Y and Z, this weight gradually falls in as a counterbalance, and so continues the motion equable and easy in all its parts.

The water wasted by this machine is not above the hundredth part of what a water-wheel will expend, to raise an equal quantity. But where a fall, proportionable to the intended rise of water, cannot be had, with a convenient sewer to carry off the waste water over and above, this device cannot be well put in practice.

WATER may also be raised by means of a stream AB turning a wheel CDE, according to the order of the

Hydraulic
Engines36
Steam-
engine.37
Engine for
raising wa-
ter by amultiplying
wheel.Plate
CCKLIV.
fig. 6.38
The Per-
sian wheel.

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Hydraulic
Engines
Plate
CCXLI.
fig. 8.

letters, with buckets *a, a, a, a*, &c. hung upon the wheel by strong pins *b, b, b, b*, &c. fixed in the side of the rim: but the wheel must be made as high as the water is intended to be raised above the level of that part of the stream in which the wheel is placed. As the wheel turns, the buckets on the right hand go down into the water, and are thereby filled, and go up full on the left hand, until they come to the top at *K*, where they strike against the end *n* of the fixed trough *M*, and are thereby overfet, and empty the water into the trough; from which it may be conveyed in pipes to the place which it is designed for: and as each bucket gets over the trough, it falls into a perpendicular position again, and goes down empty, until it comes to the water at *A*, where it is filled as before. On each bucket is a spring *r*, which, going over the top or crown of the bar *m*, (fixed to the trough *M*), raises the bottom of the bucket above the level of its mouth, and so causes it to empty all its water into the trough.

Sometimes this wheel is made to raise water no higher than its axis; and then, instead of buckets hung upon it, its spokes, *C, d, e, f, g, h*, are made of a bent form, and hollow within; these hollows opening into the holes *C, D, E, F*, in the outside of the wheel, and also into those at *O* in the box *N* upon the axis. So that as the holes *CD*, &c. dip into the water, it runs into them; and as the wheel turns, the water rises in the hollow spokes *c, d*, &c. and runs out in a stream *P* from the holes at *O*, and falls into the trough *Q*, from whence it is conveyed by pipes. And this is a very easy way of raising water, because the engine requires neither men nor horses to turn it.

39
Fire-
engines.

Engines for extinguishing fire are either forcing or lifting pumps; and being made to raise water with great velocity, their execution in great measure depends upon the length of their levers, and the force wherewith they are wrought.

Plate
CCXLII.
fig. 5.

For example, *AB* is the common squirting fire-engine. *DC* is the frame of a lifting-pump, wrought by the levers *E* and *F* acting always together. During the stroke, the quantity of water raised by the piston *N* spouts with force through the pipe *G*, made capable of any degree of elevation by means of the yielding leather-pipe *H*, or by a ball and socket, capable of turning every way, screwed on the top of the pump. Between the strokes on this machine the stream is discontinued. The engine is supplied by water poured in with buckets above; the dirt and filth whereof are kept from choking the pump-work by help of the strainer *IK*.

A considerable improvement has since been made to these machines, in order to keep them discharging a continual stream. In doing whereof it is not to be understood that they really throw out more water than do the squirting ones of the same size and dimensions with themselves; but that the velocity of the water, and of course the friction of all the parts, being less violent, the stream is more even and manageable, and may be directed hither or thither with greater ease and certainty than if it came forth only by fits and starts: The machine, thus improved, is therefore generally better adapted to the purpose intended than the former, especially in the beginning of these calamitous accidents.

Hydraulic
Engines.
Plate
CCXLII.
fig. 6.

The stream is made continual from the spring of air confined in a strong metal vessel *CC*, in the fire-engine *AB*, fixed between the two forcing-pumps *D* and *E*, wrought with a common double lever *FG* moving on the centre *H*. The pistons in *D* and *E* both suck and force alternately, and are here represented in their different actions; as are also the respective valves at *IK* and *LM*.

The water to supply this engine, if there be no opportunity of putting the end of a sucking-pipe, occasionally to be screwed on, into a moat or canal, which would spare much hurry and labour in case of fire, is also poured into the vessel *AB*; and being strained through the wire grate *N*, is, by the pressure of the atmosphere, raised through the valves *K* and *M* into the barrels of *D* or *E*, when either of their forcers ascend; whence again it will be powerfully pushed when they descend into the air-vessel *CC*, through the valves *I* and *L* by turns: by the force whereof the common air between the water and the top of the air-vessel *O* will from time to time be forcibly crowded into less room, and much compressed; and the air being a body naturally endowed with a strong and lively spring, and always endeavouring to dilate itself every way alike in such a circumstance, bears strongly both against the sides of the vessel wherein it is confined, and the surface of the water thus injected; and so makes a constant regular stream to rise through the metal pipe *P* into the leather one *Q*, screwed thereon; which being flexible, may be led about into rooms and entries, as the case may require.

Should the air contained in this vessel be compressed into half the space it took up in its natural state, the spring thereof will be much about doubled; and as before it equalled and was able to sustain the pressure of a single atmosphere, it having now a double force, by the power of that spring alone will throw water into air, of the common degree of density, about thirty feet high. And should this compressure be still augmented, and the quantity of air which at first filled the whole vessel be reduced into one-third of that space, its spring will be then able to resist, and consequently to raise the weight of a treble atmosphere; in which case, it will throw up a jet of water sixty feet high. And should so much water again be forced into the vessel as to fill three parts of the capacity, it will be able to throw it up about ninety feet high: and wherever the service shall require a still greater rise of water, more water must be thrust into this vessel; and the air therein being thus driven by main force into a still narrower compass, at each explosion, the gradual restitution thereof to its first dimensions is what regularly carries on the stream between the strokes, and renders it continual during the operation of the machine.

This experiment, in little, may be either made on the lifting or forcing pump, the nosels of which may be left large, on purpose for the reception of the small pipe *F*, reaching nearly to the valve at *E*, and occasionally to be screwed in. Between this pipe and the sides and top of the nosel *H*, a quantity of air will necessarily be lodged, which, when the forcer acts, will be compressed at every stroke by the rise of the water; more whereof will be pushed through *E* than can immediately get away through the pipe *F*, which

is

Hydraulic
Engines

is to be, always less in diameter than the opening of the valve at E: the degree of which condensation, and that of the restitution to its natural state of density, may be observed through the glass machines, to satisfaction.

40.
The screw
of Archi-
medes.
Plate
CCLXIII
fig. 1.

ARCHIMEDES'S SCREW is a sort of spiral pump, and receives its name from its inventor. It consists of a long cylinder AB with a hollow pipe CD round it; and is placed in an oblique position, with the lower end in the water, the other end being joined to the lower end of the winch IK, supported by the upright piece IR.

When this screw is immersed in the water, it immediately rises in the pipe by the orifice C to a level with the surface of the water EF; and if the point in the spiral, which in the beginning of the motion is coincident with the surface of the water, happen not to be on the lower side of the cylinder, the water, upon the motion of the screw, will move on in the spiral till it come to the point on the other side that is coincident with the water. When it arrives at that point, which we will suppose to be O, it cannot afterwards possess any other part of the spiral than that on the lowest part of the cylinder: for it cannot move from O toward H or G, because they are higher above the horizon; and as this will be constantly the case after the water in the spiral has attained the point O, it is plain it must always be on the under side of the cylinder.

But because the cylinder is in constant motion, every part of the spiral screw, from O to D, will by degrees succeed to the under part of the cylinder. The water therefore must succeed to every part of it, from O to D, as it comes on the lower side; that is, it must ascend on the lower part of the cylinder through all the length of the pipe, till it come to the orifice at D, where it must run out, having nothing further to support it.

41
The bal-
ance-
pumps.
fig. 3. 4.

THERE is a simple and easy method of working two pumps at once, by means of the balance AB, having a large iron ball at each end, and placed in equilibrium on the two spindles C, as represented in the 6th figure. On the right and left are two boards I, nailed to two cross pieces, fastened to the axis of the machine. On these boards the person who is to work the pump stands, and supports himself by a cross piece nailed to the two posts ED, fig. 5. At the distance of ten inches on each side the axis are fastened the pistons MN.

The man, by leaning alternately on his right and left foot, puts the balance in motion, by which the pumps OP are worked, and the water thrown into the pipe H, and carried to a height proportional to the diameter of the valves and the force of the balance. There must be placed on each side an iron spring, as F and G, to return the balance, and prevent its acquiring too great velocity.

42
The chain-
pump.
Plate
CCLXII.
fig. 4.

THE Chain-pump, A B, is ordinarily made from twelve to twenty-four feet long; and consists of two collateral square barrels, and a chain of pistons of the same form, fixed at proper distances thereon. The chain is moved in these round a coarse kind of wheel-work at either end of the machine, the teeth whereof are so made as to receive one half of the flat pistons, and let them fold in; and they take hold of the links as they rise in one of the barrels, and return by the other. The machine is wrought either by the turning

of one handle or two, according to the labour required, depending on the height to which the water is to be raised. A whole row of the pistons (which go free of the sides of the barrel by perhaps a quarter of an inch) are always lifting when the pump is at work; yet do they, by the general push in the ordinary way of working, as it is pretty brisk, commonly bring up a full bore of water in the pump. This machine is so contrived, that, by the continual folding in of the pistons, stones, dirt, and whatever happens to come in the way, may also be cleared; and therefore it is generally made use of to drain ponds, to empty sewers, and remove foul waters, in which no other pump could work.

Entertain-
ing experi-
ments.

THE last machine to be described consists of five pieces of board, forming a sort of scoop, as B. The handle C is suspended by a rope fastened to three poles, placed in a triangle, and tied together at A. ⁴³ The hydraulic scoop. Plate CCLXIII.

The working of this machine consists entirely in balancing the scoop that contains the water, and directing it in such manner that the water may be thrown in any given direction. It is evident that the operation of this machine is so very easy, that it may rather be considered as an agreeable and salutary recreation than hard labour.

With this machine a man of moderate strength, by two strokes in four seconds, can draw half a cubic foot of water, that is, more than four hundred cubic feet in an hour.

This machine is frequently used by the Dutch in emptying the water from their dikes.

SECT. VI. Entertaining Experiments.

1. SEVERAL amusing appearances may be produced by disguising or diversifying a syphon. It may, for example, be disguised in a cup, from which no liquor will flow till the fluid is raised therein to a certain height; but when the efflux is once begun, it will continue till the vessel is emptied. Thus, fig. 11. is a cup, in the centre whereof is fixed a glass pipe A, continued through the bottom at B, over which is put another glass tube, made air-tight at top by means of the cork at C; but left so open at foot, by holes made at D, that the water may freely rise between the tubes as the cup is filled. Till the fluid in the cup shall have gained the top of the innermost pipe at A, no motion will appear. The air however from between the two pipes being in the mean time extruded, by the rise of the denser fluid, and passing down the inner tube, will get away at bottom; and the water, as soon as the top of the inclosed tube shall be covered thereby, will very soon follow, and continue to rise in this machine, as in the syphon, till the whole is run off.

44
Of the sy-
phon dis-
guised,
Tantalus's
cup, &c.
Plate
CCXXXIX.

This is called by some, a *Tantalus's cup*; and, to humour the thought, a hollow figure is sometimes put over the inner tube, of such a length, that when the fluid is got nearly up to the lips of the man, the syphon may begin to act and empty the cup.

This is in effect no other than if the two legs of the syphon were both within the vessel, as in fig. 12. into which the water poured will rise in the shorter leg of the machine, by its natural pressure upwards, to its own level; and when it shall have gained the bend of the syphon, it will come away by the longer leg, as

D 3 already

Entertain-
ing experi-
ments.

Plate
CCXLIII.

45
The foun-
tain at com-
mand.
Plate
CCXLI.
fig. 1.

already described. An apple, an orange, or any other solid, may be put into the vessel, to raise the water, when it is near the bend, to set it a-running, by way of amusement.

Again, let the handle of the cup, fig. 11. be hollow; let the tube CD, screwed therein, communicate freely with the water poured into the cup, that it may rise equally in both. Being once above the level ED, it will overflow, and descending through the cavity DB, will empty the cup of its liquor.

2. The device called *the fountain at command*, acts upon the same principle with the syphon in the cup. Let two vessels A and B be joined together by the pipe C, which opens into them both. Let A be opened at top, B close both at top and bottom (save only a small hole at *b* to let the air get out of the vessel B), and A be of such a size as to hold about six times as much water as B. Let a syphon DEF be soldered to the vessel D, so that the part DE may be within the vessel, and F without it; the end D almost touching the bottom of the vessel, and the end F below the level of D: the vessel B hanging to A by the pipe C (soldered into both), and the whole supported by the pillars G and H upon the stand I. The bore of the pipe must be considerably less than the bore of the syphon.

The whole being thus constructed, let the vessel A be filled with water, which will run through the pipe C, and fill the vessel B. When B is filled above the top of the syphon at E, the water will run through the syphon, and be discharged at F. But as the bore of the syphon is larger than the bore of the pipe, the syphon will run faster than the pipe, and will soon empty the vessel B; upon which the water will cease from running through the syphon at F, until the pipe C refills the vessel B, and then it will begin to run as before. And thus the syphon will continue to run and stop alternately, until all the water in the vessel A has run through the pipe C.—So that, after a few trials, one may easily guess about what time the syphon will stop, and when it will begin to run; and then, to amuse others, he may call out, "*stop*," or "*run*," accordingly.

46
Portable
fountain
and clep-
sydra.
Plate
CCXLIII
fig. 7.

3. This figure represents a very pretty portable fountain, which, being charged with water, and inverted, will play a jet nearly as high as the reservoir, till the fluid is exhausted; and then turned up on the other end, the same thing will happen, and a real clepsydra, or water-clock, be thereby formed.

This device consists of two hollow vessels, A and B, communicating with each other only by the recurved tubes C and D; at the ends of which, E and F, are placed small adjutages to direct the jet. G and H are two open tubes, soldered into the bottom of the basins belonging to A and B, through which the water flows in, and fills those vessels to a certain height, that is, according to their length. They by their disposition also prevent the return of the water the same way, when the machine is turned upside down.

47
Hydro-
scope, or
water-
clock.
Plate
CCXLIV.
fig. 4.

4. Provide a cylindric vessel of glass or china, ABCD, about a foot high, and four inches diameter. Make a hole in its bottom, in which glue a small glass-tube E, of about one-third of an inch diameter, and whose end has been partly closed in the flame of a lamp, so that it will not suffer the water to pass out but by

drops, and that very slowly. Cover the top of the vessel with a circle of wood F, in the centre of which make a round hole about half an inch diameter.

Entertain-
ing experi-
ments.

Have a glass tube GH, a foot high, and a quarter of an inch diameter; and at one end let it have a small glass globe I, to which you may hang a weight L, by which it is kept in *equilibrio*, on or near the surface of the water; or you may pour a small quantity of mercury into the tube, for the same purpose. Fill the vessel with water; put the tube in it, and over it place the cover F, through the hole of which the tube must pass freely up and down. Now, as the water drops gradually out of the vessel, the tube will continue to descend till it come to the bottom.

Therefore, paste on the tube a graduated paper, and put it in the vessel when nearly full of water. Hang a watch by it, set to a certain hour; and as the tube descends, mark the hours, with the half and quarter hours. If the vessel be sufficiently large, with regard to the hole at the bottom, it will go for 12 hours, a day, or as much longer as you please, and requires no other trouble than that of pouring in water to a certain height. Care must be had, however, that the water be clean; for if there be any sediment, it will in time stop the small hole at bottom, or at least render the motion of the water irregular.

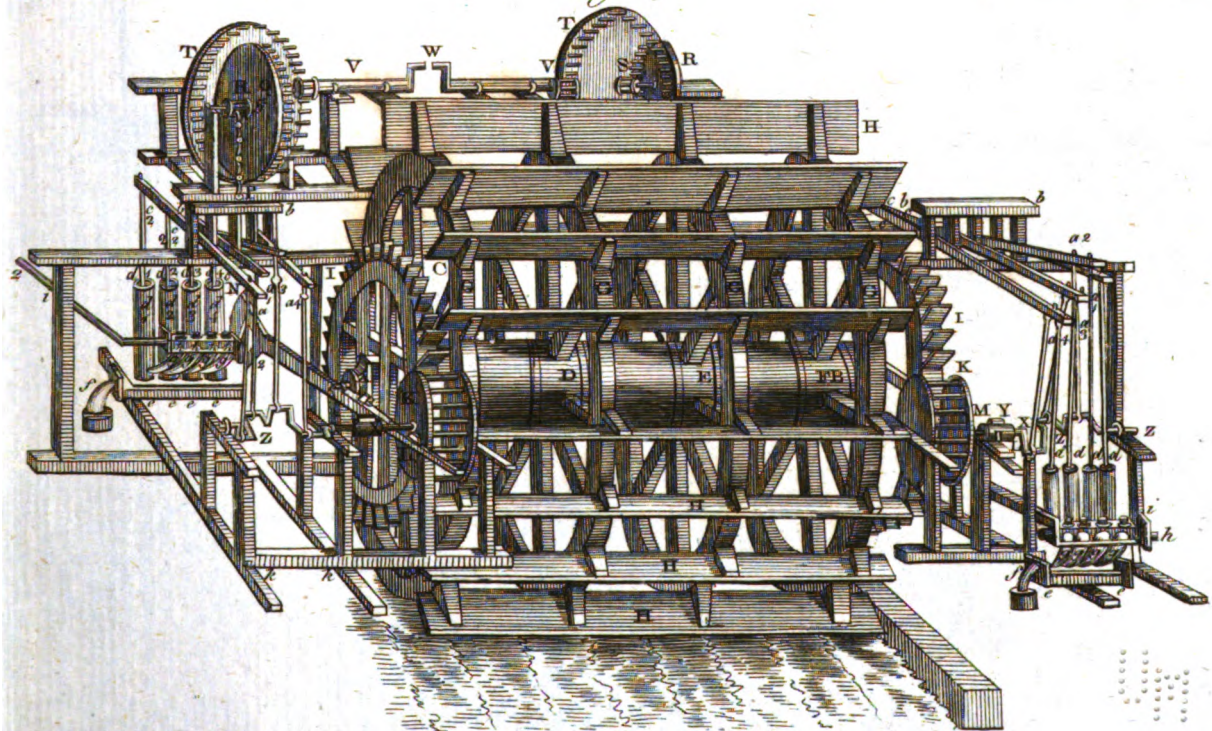
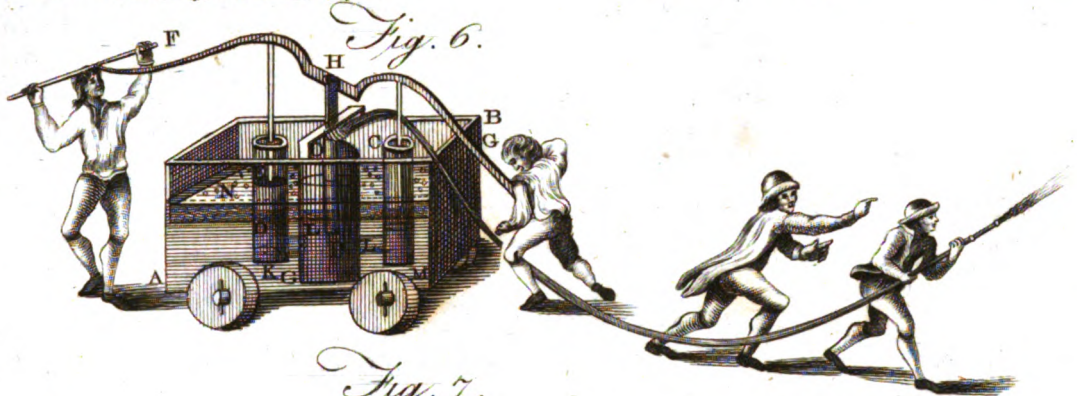
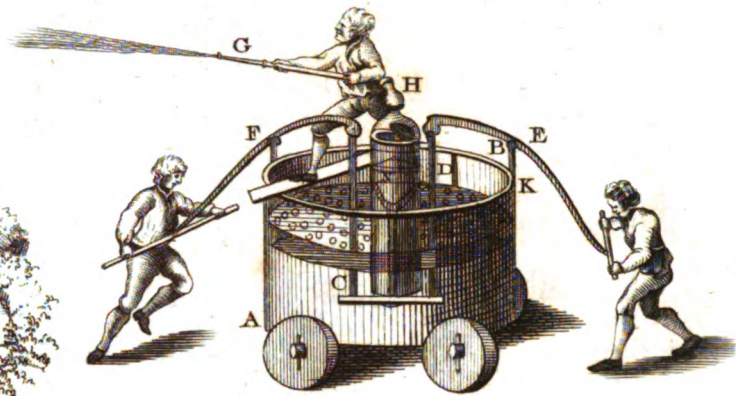
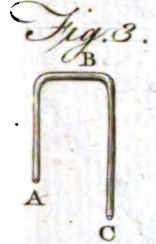
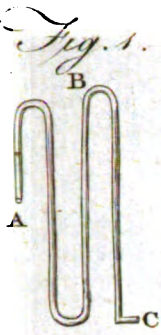
The vessel may be of tin, but the pipe at bottom should be glass, that its small aperture may not alter by use. It is to be observed, that the tube of one of these clocks is not to be graduated by another; for though the vessel be of the same diameter at top, it may not be perfectly cylindrical throughout; nor is it easy to make the hole at the bottom of one vessel exactly of the same dimension with that of another.

5. The Hon. Mr Charles Hamilton has described a curious clepsydra or water-clock of new construction. An open canal *ee*, supplied with a constant and equal stream by the syphon *d*, has at each end *ff*, open pipes of exactly equal bores, which deliver the water that runs along the canal *e*, alternately into the vessels *g* 1, *g* 2, in such a quantity as to raise the water from the mouth of the *tantalus* *i*, exactly in an hour. The canal *ee* is equally poised by the two pipes *f* 1, *f* 2, upon a centre *r*, the ends of the canal *e* are raised alternately, as the cups *xx* are depressed, to which they are connected by lines running over the pulleys *ll*. The cups *xx* are fixed at each end of the balance *mm*, which moves up and down upon its centre *v*. *n* 1, *n* 2. Are the edges of two wheels or pulleys, moving different ways alternately, and fitted to the cylinder *o* by oblique teeth both in the cavity of the wheel and upon the cylinder, which, when the wheel *n* moves one way, that is, in the direction of the minute-hand, meet the teeth of the cylinder and carry the cylinder with it, and, when *n* moves the contrary way, slip over those of the cylinder, the teeth not meeting, but receding from each other. One or other of these wheels *n* continually moves *o* in the same direction, with an equable and uninterrupted motion. A fine chain goes twice round each wheel, having at one end a weight *x*, always out of water, which equi-ponderates with *y* at the other end, when kept floating on the surface of the water in the vessel *g*, which *y* must always be; the two cups *z*, *z*, one at each end of the balance, keep it in *equilibrio*, till one of them is forced down

48
Clepsydra.
fig. 7.

HYDROSTATICS. *Fig. 5.*

Plate CCXLII.



A. Bell, Prin. Wal. Sculptor, fecit.

20

Fig. 1.

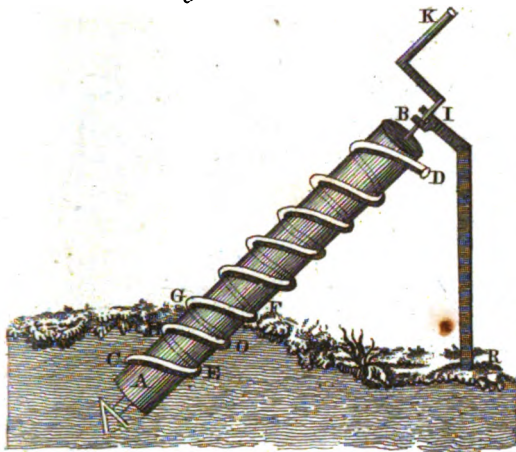


Fig. 2.

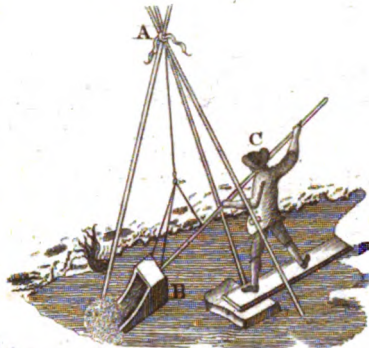


Fig. 15.

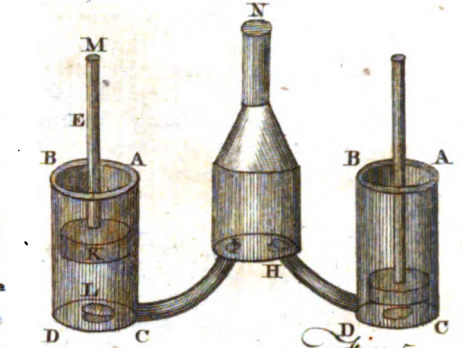


Fig. 3.

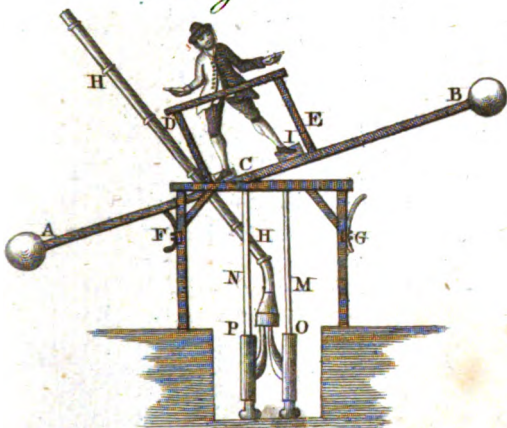


Fig. 6.



Fig. 7.

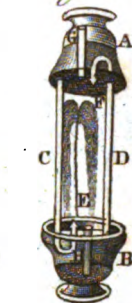


Fig. 5.



Fig. 11.



Fig. 8.

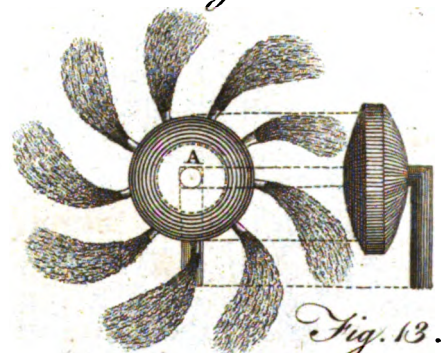


Fig. 13.



Fig. 9.

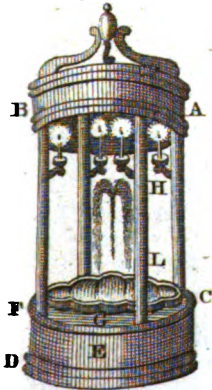


Fig. 10.

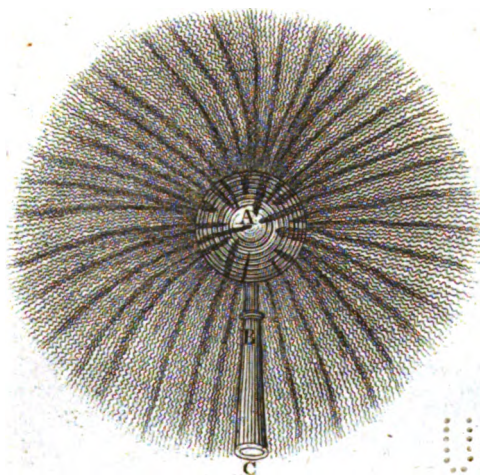
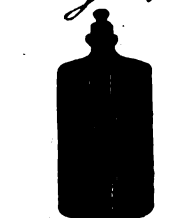


Fig. 12.



Fig. 14.



- A. Bell, Prin. & Sculptor, first

14

Entertain-
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ments

down by the weight and impulse of the water, which it receives from the *tantalus* *t t*: each of these cups *z, z*, has likewise a *tantalus* of its own *b, b*, which empties it after the water has done running from *g*, and leaves the two cups again in *equilibrium*: *q* is a drain to carry off the water. The dial-plate, &c. needs no description. The motion of the *clepsydra* is effected thus: As the end of the canal *ec*, fixed to the pipe *f 1*, is, in the figure, the lowest, all the water supplied by the syphon runs through the pipe *f 1*, into the vessel *g 1*, till it runs over the top of the *tantalus* *t*; when it immediately runs out at *i* into the cup *z*, at the end of the balance *m*, and forces it down; the balance moving on its centre *v*. When one side of *m* is brought down, the string which connects it to *f 1*, running over the pulley *l*, raises the end *f 1*, of the canal *ec*, which turns upon its centre *r*, higher than *f 2*; consequently, all the water which runs through the syphon *d* passes through *f 2* into *g 2*, till the same operation is performed in that vessel, and so on alternately. As the height the water rises in *g* in an hour, *viz.* from *s* to *t*, is equal to the circumference of *n*, the float *y* rising through that height along with the water, lets the weight *x* act upon the pulley *n*, which carries with it the cylinder *o*; and this, making a revolution, causes the index *k* to describe an hour on the dial plate. This revolution is performed by the pulley *n 1*; the next is performed by *n 2*, whilst *n 1* goes back, as the water in *g 1* runs out through the *tantalus*; for *y* must follow the water, as its weight increases, out of it. The axis *o* always keeps moving the same way; the index *p* describes the minutes; each *tantalus* must be wider than the syphon, that the vessels *g g* may be emptied as low as *s*, before the water returns to them.

49
A fountain
which
spouts wa-
ter in form
of a shower.
fig. 2.

50
A fountain
which
spreads the
water in
form of a
table-cloth.
fig. 3.

51
The globu-
lar fountain
Plate
CCXLIII.
fig. 10.

52
The hy-
draulic
dancer,
fig. 5.

6. To the tube wherein the water is to rise, fit a spherical or lenticular head, *AB*, made of a plate of metal, and perforated at top with a great number of little holes. The water rising with vehemence towards *AB*, will be there divided into innumerable little threads, and afterwards broke, and dispersed into the finest drops.

7. To the tube *AB*, solder two spherical segments *C* and *D*, almost touching each other; with a screw *E*, to contract or amplify the interstice or chink at pleasure. Others choose to make a smooth, even cleft, in a spherical or lenticular head, fitted upon the tube. The water spouting through the chink, or cleft, will expand itself in manner of a cloth.

8. Make a hollow globe *A*, of copper or lead, and of a size adapted to the quantity of water that comes from the pipe to which it is to be placed. Pierce a number of small holes thro' this globe, that all tend towards its centre; observing, however, that the diameters of all these holes, taken together, must not exceed that of the pipe at the part from whence the water flows. Annex to it a pipe *B*, of such height as you think convenient; and let it be screwed at *C*, to the pipe from whence the jet flows. The water that comes from the jet rushing with violence into the globe, will be forced out at the holes, with the direction in which they are made, and will produce a very pleasing sphere of water.

9. Procure a little figure made of cork, as *AB*, which you may paint, or dress in a light stuff, after your own fancy. In this figure you are to place the small hollow cone *C*, made of thin leaf-brass. When

the figure is placed on the jet-d'eau that plays in a perpendicular direction, it will remain suspended on the top of the water, and perform a great variety of motions.

If a hollow ball of copper, of an inch diameter, and very light, be placed on a similar jet, it will, in like manner, remain suspended, revolving on its centre, and spreading the water all round it, in the manner represented by fig. 6 or Plate CCXLIV. fig. 1.—But note, that as it is necessary the ball, &c. when on the descent, should keep the same precise perpendicular wherein it rose (since otherwise it would miss the stream and fall downright), such a fountain should only be played in a place free from wind.

10. Make a hollow leaden cone *A*, whose axis is one-third of the diameter of its base. The circle *C*, that forms its base, must be in proportion to the surface of water that flows from the jet on which it is to be placed, that it may flow from it equally on all sides. To the cone join the pipe *B*, which serves not only as a support, but is to be pierced with a number of holes, that it may supply the cone with a sufficient quantity of water. Screw the tube just mentioned to the top of that from whence the jet proceeds.—The water that rushes into the cone from the pipe, will run over its circumference, and form a hemispherical cascade. If this piece be so constructed that it may be placed in a reversed position, it will produce a fountain in the form of a vase, (see fig. 2.); and if there be a sufficient quantity of water, both these pieces may be placed on the same pipe, the fountain at top and the cascade underneath, which by their variety will produce a very pleasing appearance.

11. Let there be two portions of a hollow sphere, that are very shallow: and let them be so joined together, that the circular space between them may be very narrow. Fix them vertically to a pipe from whence a jet proceeds. In that part by which the portions of the sphere are joined, there must be made a number of holes; then the water rushing into the narrow cavity will be forced out from the holes, and produce a regular figure of the sun, as in the plate. This piece requires a large quantity and force of water to make it appear to advantage.

Several pieces of this sort may be placed over each other, in a horizontal direction, and so that the same pipe may supply them all with water (see fig. 6. of plate CCXLV.) It is proper to observe, that the diameter of these pieces must continually diminish, in proportion to their distance from the bottom.

12. Make a hollow circle *A*, the sides of which are to be pierced with 12 or 15 holes, made in an inclined direction: or you may place the like number of small tubes round the circle. Fix this circle on the top of a jet; in such manner that it may turn freely round. The water rushing violently into the hollow circle will keep it in continual motion; and at the same time forcing out of the holes or small tubes, will form a revolving figure with rays in different directions, as in the plate.

13. Provide a strong copper vessel *A*, of such figure as you think convenient; in which solder a pipe *BE*, of the same metal. Let there be a cock at *H*, which must be made so tight that no air can pass by it. The pipe *BE* must go very near the bottom of the vessel, but

Entertain-
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53
The hemi-
spherical
cascade.
Plate
CCXLV.
fig. 1.

54
The water-
fun.
Plate
CCXLV.
fig. 5.

55
The revol-
ving water-
fun.
Plate
CCXLIII.
fig. 8.

56
The com-
pressed jet-
d'eau.
fig. 12.

not

Entertain-
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ments.

not touch it. There must be another pipe E, at whose extremity G there is a very small hole: this pipe must be screwed into the former.

The vessel being thus disposed, take a good syringe; and placing the end of it in the hole at G, open the cock, and force the air into the vessel; then turn the cock and take out the syringe. Repeat this operation several times, till the air in the vessel be strongly condensed. Then fill the syringe with water, and force it into the vessel, in the same manner as you did the air; and repeat this operation till you can force no more water into the vessel; then shut the cock. This vessel will be always ready to perform an extempore jet d'eau: for, on turning the cock, the spring of the compressed air will force out the water with great violence, and the jet will continue, though constantly decreasing in force, till the water is all exhausted, or the air within the vessel is come to the same density with that without.

57
The mar-
vellous ves-
sel, fig. 14.

14. Let there be made a tin vessel, about six inches high, and three inches in diameter. The mouth of this vessel must be only one quarter of an inch wide; and in its bottom make a great number of small holes about the size of a common sewing needle. Plunge this vessel in water, with its mouth open; and when it is full, cork it up and take it out of the water. So long as the vessel remains corked, no water whatever will come out; but as soon as it is uncorked, the water will issue out from the small holes at its bottom. You must observe, that if the holes at its bottom of the vessel be more than one sixth of an inch diameter, or if they be in too great number, the water will run out though the vessel be corked; for then the pressure of the air against the bottom of the vessel will not be sufficient to confine the water.

58
A glass full
of water
inverted,
and the wa-
ter not
spilt,
fig. 13.

59
The circu-
lating foun-
tain.
Plate
CCXLV.
fig. 4.

An experiment similar to this is made with a glass filled with water, over which a piece of paper is placed. The glass is then inverted; and the water, by the pressure of the air under it, will remain in the glass. That the paper, though the seeming, is not the real, support of the water, will appear from n° 25.

15. In this fountain, the air being compressed by the concealed fall of water, makes a jet, which, after some continuance, is considered by the ignorant as a perpetual motion; because they imagine that the same water which fell from the jet arises again. The boxes CE and DYX being close, we see only the bason ABW, with a hole at W, into which the water spouting at B falls; but that water does not come up again; for it runs down through the pipe WX into the box DYX, from whence it drives out the air through the ascending pipe YZ, into the cavity of the box CE, where, pressing upon the water that is in it, it forces it out through the spouting pipe OB, as long as there is any water in CE; so that this whole play is only whilst the water contained in CE, having spouted out, falls down through the pipe WX into the cavity DYX. The force of the jet is proportionable to the height of the pipe WX, or of the boxes CE and DY above one another: the height of the water, measured from the bason ABW to the surface of the water in the lower box DYX, is always equal to the height measured from the top of the jet to the surface of the water in the middle cavity at CE. Now, since the surface CE is always falling, and the water in DY always rising,

Entertain-
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ments

the height of the jet must continually decrease, till it is shorter by the height of the depth of the cavity CE, which is emptying, added to the depth of the cavity DY, which is always filling; and when the jet is fallen so low, it immediately ceases. The air is represented by the points in this figure. To prepare this fountain for playing, which should be done unobserved, pour in water at W, till the cavity DXY is filled; then invert the fountain, and the water will run from the cavity DXY into the cavity CE, which may be known to be full, when the water runs out at B held down. Set the fountain up again, and, in order to make it play, pour in about a pint of water into the bason ABW; and as soon as it has filled the pipe WX, it will begin to play, and continue as long as there is any water in CE. You may then pour back the water left in the bason ABW, into any vessel, and invert the fountain, which, being set upright again, will be made to play, by putting back the water poured out into ABW; and so on as often as you please.

The fountain fig. 3. is of the same kind; but having double the number of pipes and concealed cavities, it plays as high again. In order to understand its structure, see fig. 7. The bason is A, the four cavities are B, C, D, and E, from which the water through the pipe f G spouts up to double the height of the fountain, the air at E, which drives it, being doubly condensed. The water going down the pipe 1 (i. e. gr. three feet long), condenses the air that goes up into the cavity C through the pipe 2, so as to make it $\frac{1}{2}$ stronger than the common air; then the water, which falling in the pipe 3 from C to D, is capable, by the height of its fall, of condensing the air at E, so as to make it $\frac{1}{4}$ stronger, being pushed at C by air already condensed into $\frac{1}{2}$ less space, causes the air at E to be condensed twice as much; that is, to be $\frac{1}{4}$ stronger than common air; and therefore it will make the water at G spout out with twice the force, and rise twice as high as it would do if the fountain had been of the same structure with the former. In playing this fountain turn it upside down, and taking out the plugs g, b, fill the two cavities C and E, and having shut the holes again, set the fountain upright, and pour some water into the bason A, and the jet will play out at G; but the fountain will begin to play too soon, and therefore the best way is to have a cock in the pipe 3, which, being open, whilst the cavities C and E are filled, and shut again before the fountain is set up, will keep the water thrown into the bason from going down the pipe 1, and that of the cavity C from going down the pipe 3, by which means the fountain will not play before its time, which will be as soon as the cock is opened.

16. Procure a tin vessel ABC, five inches high and four in diameter; and let it be closed at top. To the bottom of this vessel let there be soldered the pipe DE, fig. 5. of ten inches length, and half an inch in diameter: this pipe must be open at each end, and the upper end must be above the water in the vessel. To the bottom also fix five or six small tubes F, about one-eighth of an inch diameter. By these pipes the water contained in the vessel is to run slowly out.

Place this machine on a sort of tin bason GH, in the middle of which is a hole of one quarter of an inch diameter.

60

The mag-
nificat
cal cascade,
fig. 5.

Entertain-
ing experi-
ments.

Entertain-
ing experi-
ments.

diameter. To this tube DE, fix some pieces that may support the vessel over the basin; and observe that the end D, of the tube DE, must be little more than one quarter of an inch from the basin. There must be also another vessel placed under the basin, to receive the water that runs from it.

Now, the small pipes discharging more water into the basin than can run out at the hole in its centre, the water will rise in the basin, above the lower end of the pipe DE, and prevent the air from getting into the vessel AB; and consequently the water will cease to flow from the small pipes. But the water continuing to flow from the basin, the air will have liberty again to enter the vessel AB, by the tube DE, and the water will again flow from the small pipes. Thus they will alternately stop and flow as long as any water remains in the vessel AB.

As you will easily know, by observing the rise of the water, when the pipes will cease to flow, and by the fall of it, when they will begin to run again, you may safely predict the change; or you may command them to run or stop, and they will seem to obey your orders.

62
The illumi-
nated foun-
tain.
Plate
CCXLIII.
fig. 9.

17. This fountain begins to play when certain candles placed round it are lighted, and stops when those candles are extinguished. It is constructed as follows. Provide two cylindrical vessels, AB and CD. Connect them by tubes open at both ends, as HL, FB, &c. so that the air may descend out of the higher into the lower vessel. To these tubes fix candlesticks H, &c. and to the hollow cover CF, of the lower vessel, fit a small tube EF, furnished with a cock G, and reaching almost to the bottom of the vessel. In G let there be an aperture with a screw, whereby water may be poured into CD.

Now, the candles at H, &c. being lighted, the air in the contiguous pipes will be thereby rarified, and the jet from the small tube EF will begin to play: as the air becomes more rarified, the force of the jet will increase, and it will continue to play till the water in the lower vessel is exhausted. It is evident, that as the motion of the jet is caused by the heat of the candles, if they be extinguished, the fountain must presently stop.

63
The solar
fountain.
Plate
CCXLV.
fig. 8.

18. This fountain is contrived to play by the spring of the air, increased by the heat of the sun, and serves also for a dial at the same time. GNS is a hollow globe of thin copper, eighteen inches in diameter, supported by a small inverted basin, resting on a frame ABC, with four legs, between which there is a large basin of two feet diameter. In the leg C there is a concealed pipe, proceeding from G, the bottom of the inside of the globe, along HV, and joining an upright pipe u I, for making a jet at I. The short pipe I u, going to the bottom of the basin, has a valve at u under the horizontal part HV, and another valve at V

above it, and under the cock, &c. At the north pole N, there is a screw for opening a hole, through which the globe is supplied with water. When the globe is half filled, let the machine be set in a garden, and as the sun heats the copper and rarifies the included air, the air will press upon the water, which, descending through the pipe GCHV, will lift up the valve V, and shut the valve u, and the cock being open, spout out at I, and continue to do so for a long time if the sun shines, and the adjutage be small. At night, as the air condenses again by the cold, the outward air pressing into the adjutage I, will shut the valve V, but by its pressure on the basin DuH, push up the water which has been played in the day-time through the valve u, and the pipe uHG into the globe, so as to fill it up again to the same height which it had at first, and the next sun shine will cause the fountain to play again, &c. The use of the cock is to keep the fountain from playing till you think proper: a small jet will play six or eight hours.

If the globe be set to the latitude of the place, and rectified before it be fixed, with the hour-lines or meridians drawn upon it, the hours marked, and the countries painted, as on the common globe, it will form a good dial: the sun then shining upon the same places in this globe as it does on the earth itself. This fountain was invented by Dr Defaguliers.

19. There is a pretty contrivance, by which the specific gravity of the body is so altered, that it rises and sinks in water at our pleasure. Let little images of men, about an inch high, of coloured glass, be bespoke at a glass-house; and let them be made so as to be hollow within, but so as to have a small opening into this hollow, either at the sole of the foot or elsewhere. Let them be set afloat in a clear glass phial of water, filled within about an inch of the mouth of the bottle; then let the bottle have its mouth closed with a bladder, closely tied round its neck, so as to let no air escape one way or the other. The images themselves are nearly of the same specific gravity with water, or rather a little more light, and consequently float near the surface. Now when we press down the bladder, tied on at the top, into the mouth of the bottle, and thus press the air upon the surface of the water in the bottle: the water being pressed will force into the hollow of the image through the little opening: thus the air within the images will be pressed more closely together, and being also more filled with water now than before, the images will become more heavy, and will consequently descend to the bottom; but, upon taking off the pressure from above, the air within them will again drive out the water, and they will rise to the same heights as before. If the cavities in some of the images be greater than those in others, they will rise and fall differently, which makes the experiment more amusing.

63
The hy-
draulic dis-
vers.

H Y D

HYDROTHORAX, a collection of water in the breast. See (the *Index* subjoined to) MEDICINE.

HYDRUNTUM, (anc. geog.), a noble and commodious port of Calabria, from which there was a shorter passage to Apollonia (Pliny.) Famous for its an-

H Y D

tiquity, and for the fidelity and bravery of its inhabitants. Now Otranto, a city of Naples, at the entrance of the Gulf of Venice. E. Long. 19° 15'. N. Lat. 40° 12'.

HYEMANTES, (in the primitive church), offenders

Hygeia
||
Hygrometer.

ders who had been guilty of such enormities, that they were not allowed to enter the porch of the churches with the other penitents, but were obliged to stand without, exposed to all the inclemency of the weather.

HYGEIA, in mythology. See HEALTH.

HYGIEINE, *ἡγιεινή*, formed of *υγιής*, "sound, healthy," that branch of medicine which considers health, and discovers proper means and remedies, with their use, in the preservation of that state.

The objects of this branch of medicine are, the non-naturals. See DIET, EXERCISE, &c.

HYGIEINE, more largely taken, is divided into three parts; prophylactice, which foresees and prevents diseases; synergetice, employed in preserving health; and analeptice, whose office is to cure diseases, and restore health.

HYGINUS (Caius Julius), a grammarian, the freedman of Augustus, and the friend of Ovid, was born in Spain, or, according to others, in Alexandria. He wrote many books which are mentioned by ancient authors; all of which are lost, except some fables, and a work entitled *Astronomicum Poeticon*; and even these are come down to us very imperfect. The best edition of these remains is that of Munkler, published with some other pieces of antiquity in 2 vols 8vo, 1681, under the title of *Mythographi Latini*.

HYGROMETER, an instrument for measuring the degrees of dryness or moisture of the atmosphere, in like manner as the barometer and thermometer measure its different degrees of gravity or warmth.

Though every substance which swells in moist, and shrinks in dry weather, is capable of becoming an hygrometer; yet this kind of instrument is far from being as yet arrived at such a degree of perfection as the barometers and thermometers. There are three general principles on which hygrometers have been constructed. 1. The lengthening and shortening of strings by dryness and moisture, or their twisting and untwisting by the same. 2. The swelling and shrinking of solid substances by moisture or dryness; and, 3. By the increase or decrease of the weight of particular bodies whose nature is to absorb the humidity of the atmosphere.

1. On the first of these principles Mr Smeaton hath constructed an hygrometer greatly superior to any that had appeared before; and of which the following account is given in the 62d volume of the Philosophical Transactions.

"Having some years ago attempted to make an accurate and sensible hygrometer by means of a hempen cord of a considerable length, I quickly found, that, though it was more than sufficiently susceptible of every change in the humidity of the atmosphere, yet the cord was upon the whole in a continual state of lengthening. Though this change was the greatest at first, yet it did not appear probable that any given time would bring it to a certainty; and, furthermore, it seemed, that as the cord grew more determinate in mean length, the alteration by certain differences of moisture grew less. Now, as on considering wood, catgut, paper, &c. there did not appear to be a likelihood of finding any substance sufficiently sensible of differences of moisture that would be unalterable under the same degrees thereof; this led me to consider of a

construction which would readily admit of an adjustment; so that, though the cord whereby the instrument is actuated may be variable in itself, both as to absolute length, and difference of length under given degrees of moisture, yet that, on supposition of a material departure from its original scale, it might be readily restored thereto; and, in consequence, that any number of hygrometers similarly constructed, might, like thermometers, be capable of speaking the same language.

"The two points of heat the more readily determinable in a thermometer, are the points of freezing and boiling water. In like manner, to construct hygrometers which shall be capable of agreement, it is necessary to establish two different degrees of a moisture which shall be as fixed in themselves, and to which we can have recourse as readily and as often as possible.

"One point is given by making the substance perfectly wet, which seems sufficiently determinable; the other is that of perfect dry, which I do not apprehend to be attainable with the same precision. A readiness to imbibe wet, so that the substance may be soon and fully saturated, and also a facility of parting with its moisture on being exposed to the fire to dry; at the same time, that neither immersion, nor a moderate exposition to the warmth of the fire, shall injure its texture; are properties requisite to the first mover of such an hygrometer, that in a manner exclude all substances that I am acquainted with, besides hempen and flaxen threads and cords, or substances compounded of them.

"Upon these ideas, in the year 1758, I constructed two hygrometers as nearly alike as possible, in order that I might have the means of examining their agreement or disagreement on similar or dissimilar treatment. The interval or scale between dry and wet I divided into 100 equal parts, which I call the degrees of this hygrometer. The point of 0 denotes perfect dry; and the numbers increase with the degrees of moisture to 100, which denotes perfect wet.

"On comparing them for some time, when hung up together in a passage or staircase, where they would be very little affected by fire, and where they would be exposed to as free an air as possible in the inside of the house, I found that they were generally within one degree, and very rarely differed two degrees; but as these comparisons necessarily took up some time, and were frequently interrupted by long absences from home, it was some years before I could form a tolerable judgment of them. One thing I soon observed, not altogether to my liking, which was, that the flaxen cords made use of seemed to make so much resistance to the entry of small degrees of moisture (such as is commonly experienced within doors in the situation above mentioned), that all the changes were comprised within the first 30 of the scale; but yet, on exposing them to the warm steam of a wash-house, the index quickly mounted to 100. I was therefore desirous of impregnating the cords with something of a saline nature, which should dispose them more forcibly to attract moisture; in order that the index might, with the ordinary changes of the moisture in the atmosphere, travel over a greater part of the scale of 100. How to do this in a regular and fixed quantity, was the subject of many experiments, and several years interrupted inquiry. At last I tried the one hereafter described, which seemed

Hygrometer.

Fig. 1.



Fig. 2.



Fig. 3.

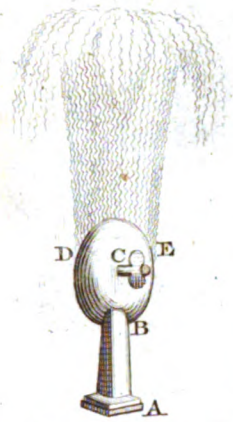


Fig. 4.



Fig. 5.

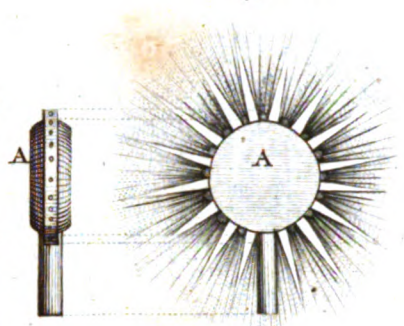


Fig. 6.

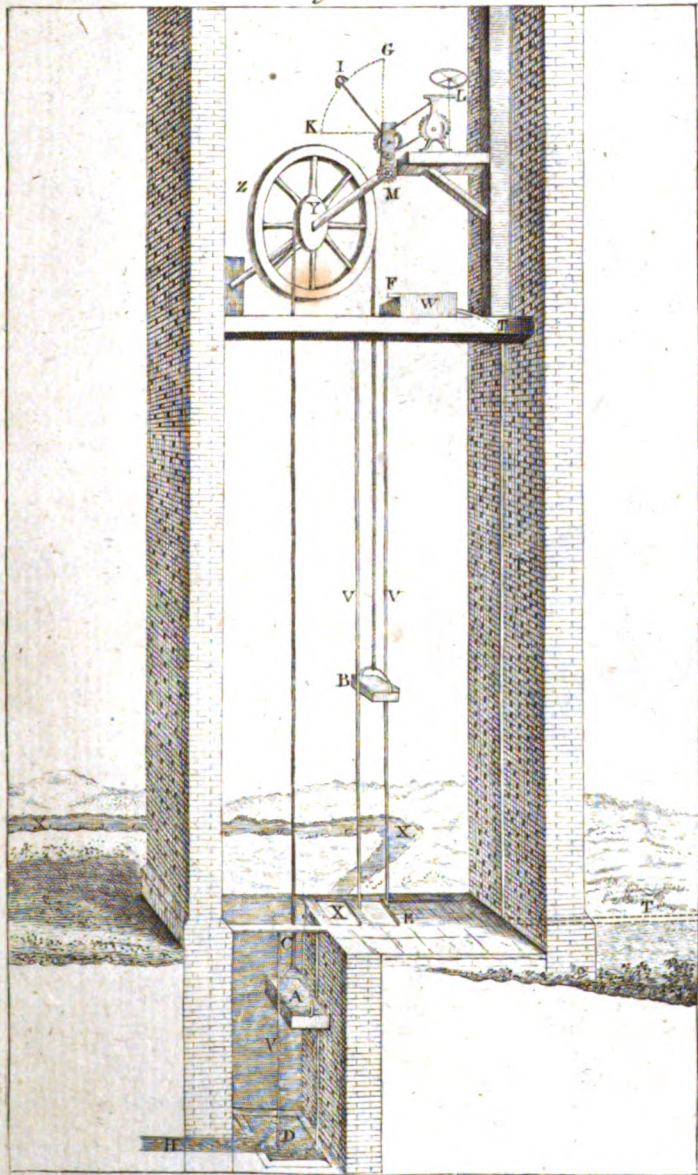
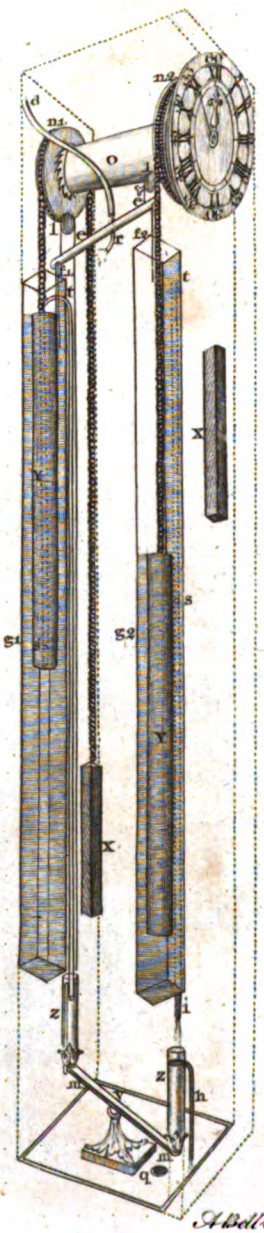


Fig. 7.



10

HYDROSTATICS.

Plate CCXLV.

Fig. 1.

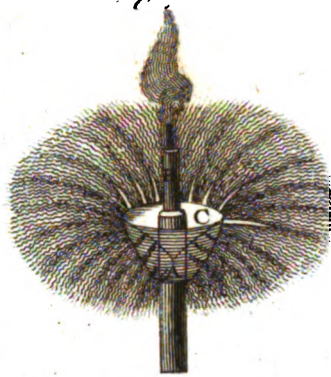


Fig. 3.

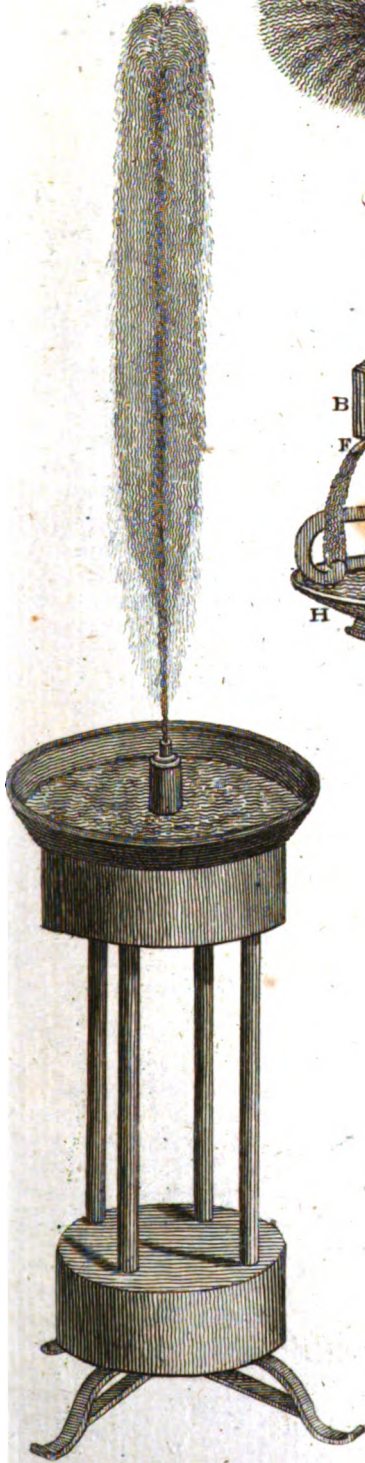


Fig. 5.

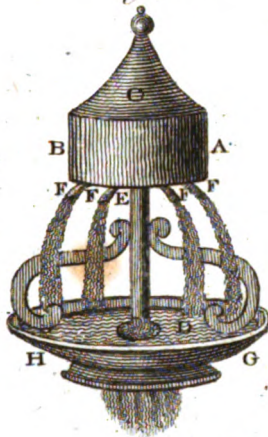


Fig. 4.

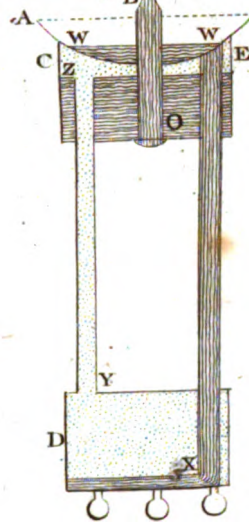


Fig. 2.

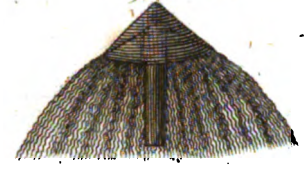


Fig. 6.

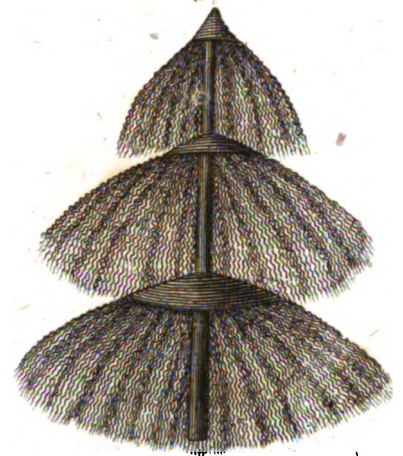


Fig. 8.

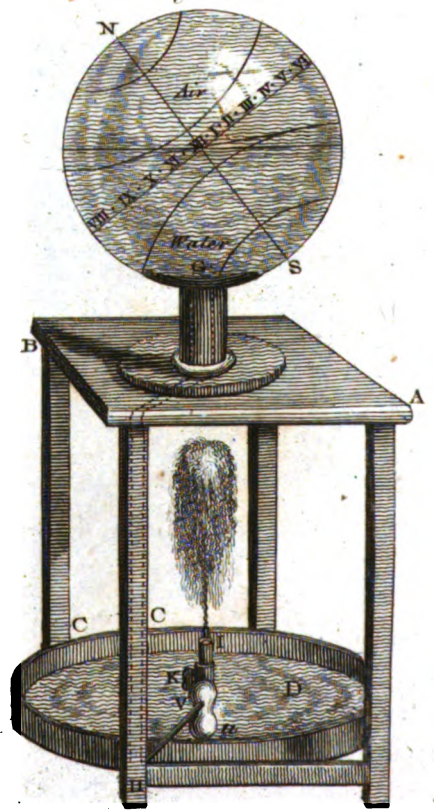
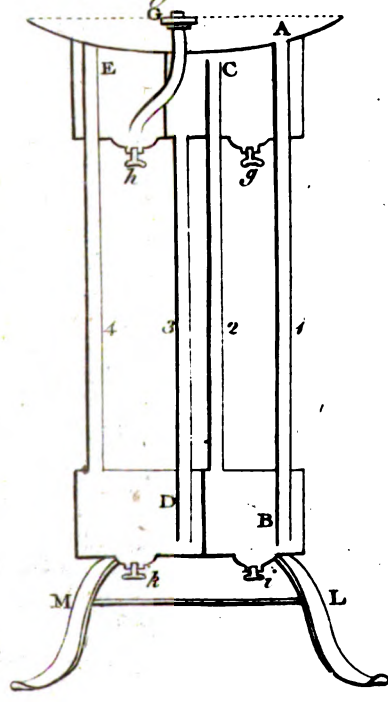


Fig. 7.



J. Bell & Son, W. & A. Sculptors

Hygrometer. to answer my intention in a great measure; and tho' upon the whole it does not appear probable that ever this instrument will be made capable of such an accurate agreement as the mercurial thermometers are, yet if we can reduce all the disagreements of an hygrometer within $\frac{1}{100}$ th part of the whole scale, it will probably be of use in some philosophical inquiries, in lieu of instruments which have not yet been reduced to any common scale at all.

Plates CCXLVI. CCXLVII. " Fig. 1. and 2. ABC is an orthographic delineation of the whole instrument seen in front in its true proportion. DE is that of the profile, or instrument seen edgewise. FG in both represents a flaxen cord about 35 inches long, suspended by a turning peg F, and attached to a loop of brass-wire at A, which goes down into the box cover H, and defends the index, &c. from injury; and by a glass exposes the scale to view.

" Fig. 3. shows the instrument to a larger scale, the upright part being shortened, and the box-cover removed; in which the same letters represent the same parts as in the preceding figures; GI are two loops or long links of brass-wire, which lay hold of the index KL, moveable upon a small stud or centre K. The cord FG is kept moderately strained by a weight M of about half a pound avoirdupois.—It is obvious, that, as the cord lengthens and shortens, the extreme end of the index rises and falls, and successively passes over N 2 the scale disposed in the arch of a circle, and containing 100 equal divisions. This scale is attached to the brass sliding ruler QP, which moves upon the directing piece RR, fixed by screws to the board, which makes the frame or base of the whole; and the scale and ruler NQP is retained in any place nearer to or further from the centre K, as may be required by the screw S.

" Fig. 4. represents in profile the sliding piece and stud I (fig. 3.), which traverses upon that part of the index next the centre K; and which can, by the two screws of the stud, be retained upon any part of the index that is made parallel; and which is done for three or four inches from the centre, for that purpose. The stud is filed to the edges, like the fulcrum of a scale-beam; one being formed on the under-side, the other on the upper, and as near as may be to one another. An hook formed at the lower end of the wire-loops CI, retains the index, by the lowermost edge of the stud; while the weight M hangs by a small hook upon the upper edge: by these means the index is kept steady, and the cords strained by the weight, with very little friction or burthen upon the central stud K.

" Fig. 5. is a parallelogram of plate-brass, to keep out dust, which is attached to the upper edge of the box-cover H; and serves to shut the part of the box-cover necessarily cut away, to give leave for the wire GI to traverse with the sliding stud nearer to or further from the centre of the index K; and where, in fig. 5. *a* is an hole of about an inch diameter, for the wire GI to pass through in the rising and falling of the index freely without touching; *b* is a slit of a lesser size, sufficient to pass the wire, and admit the cover to come off without deranging the cord or index; *cc* are two small screws applied to two slits, by which the plate slides lengthways, in order to adapt the hole *a*

to the wire GI, at any place of the stud I upon the index KL.

" 1. In this construction, the index KL being 12 inches long, 4 inches from the extreme end are filed so narrow in the direction in which it is seen by the eye, that any part of these four inches lying over the divisions of the scale, becomes an index thereto. The scale itself slides four inches, so as to be brought under any part of the four inches of the index attenuated as above-mentioned.

" 2. The position of the directing piece RR is so determined as to be parallel to a right line drawn thro' 0 upon the scale, and the centre K of the index; consequently, as the attenuated part of the index forms a part of a radius or right line from the same centre, it follows, that whenever the index points to 0 upon the scale, though the scale is moved nearer to or further from the centre of the index, yet it produces no change in the place to which the index points.

" 3. When the divided arch of the scale is at 10 inches from the centre (that is, at its mean distance); then the centre of the arch and the centre of the index are coincident. At other distances, the extremes of which are eight or twelve inches, the centre of the divisions, and the centre of the index pointing thereto, not being coincident, the index cannot move over the spaces *geometrically* proportionable to one another in all situations of the scale; yet the whole scale not exceeding 30° of a circle, it will be found on computation, that the error can never be so great as $\frac{1}{100}$ th part of the scale, or 1° of the hygrometer; which in this instrument being considered as indivisible, the mechanical error will not be sensible.

" The cord here made use of is flax, and between $\frac{1}{16}$ th and $\frac{1}{8}$ th of an inch in diameter; which can be readily ascertained by measuring a number of turns made round a pencil or small stick. It is a sort of cord used in London for making nets, and is of that particular kind called by net-makers *flaxen three-threads laid*. A competent quantity of this cord was boiled in one pound avoirdupois of water, in which was put two pennyweights troy of common salt; the whole was reduced by boiling to six ounces avoirdupois, which was done in about half an hour. As this ascertains a given strength of the brine, on taking out the cord, it may be supposed that every fibre of the cord is equally impregnated with salt. The cord being dried, it will be proper to stretch it; which may be done so as to prevent it from untwisting, by tying three or four yards to two nails against a wall, in an horizontal position, and hanging a weight of a pound or two to the middle, so as to make it form an obtuse angle. This done for a week or more in a room, will lay the fibres of the cord close together, and prevent its stretching so fast after being applied to the instrument as it would otherwise be apt to do.

" The hygrometer is to be adjusted in the following manner. The box-cover being taken off to prevent its being spoiled by the fire, and choosing a day naturally dry, set the instrument nearly upright, about a yard from a moderate fire; so that the cord may become dry, and the instrument warm, but not so near as would spoil the finest linen by too much heat, and yet fully evaporate the moisture; there let the instrument stay till the index is got as low as it will go;

E now

Hygrom-
eter.

now and then stroaking the cord betwixt the thumb and finger downwards, in order to lay the fibres thereof close together; and thereby causing it to lengthen as much as possible. When the index is thus become stationary, which will generally happen in about an hour, more or less as the air is naturally more or less dry, by means of the peg at top raise or depress the index, till it lies over the point *o*. This done, remove the instrument from the fire; and having ready some warm water in a tea-cup, take a middling camel's hair pencil, and, dipping it in the water, gently anoint the cord till it will drink up no more, and till the index becomes stationary and water will have no more effect upon it, which will also generally happen in about an hour. If in this state the index lies over the degree marked 100, all is right: if not, slack the screw *S*, and slide the scale nearer to or further from the centre, till the point 100 comes under the index, and then the instrument is adjusted for use: but if the compass of the slide is not sufficient to effect this, as may probably happen on the first adjustment, slack the proper screws, and move the sliding stud *I* nearer to or further from the centre of the index, according as the angle formed by the index between the two points of dry or wet happens to be too small or too large for the scale."

On this principle, a simple hygrometer has been made by Mr Coventry of Southwark, London. It is not upon the most accurate construction, yet will act very sensibly in the common changes of the air. Fig. 6. represents the hygrometer as applied to a wall or board. *A* is a string of whip-cord, catgut, &c. of any length at pleasure: it is suspended on a bracket *B*, and kept extended by a weight at the bottom *C*. *DD* is a slip of wood, which with the bracket is fixed perpendicularly to a wall or side of a room. It has a straight line *E* drawn down in the middle of the board, serving to point out the divisions upon the edges of the two thin circular cards *F* and *G*. At the centre of the bottom of each of these cards is glued a piece of cork, through which the string *A* is drawn: These cork-pieces serve to preserve the horizontal position of the cards. The upper card *F* is divided into 10 equal parts or divisions, and the under card *G* into 100 equal parts; the string *A* being measured into 10 equal parts, from the point of suspension *H* to the surface of the lower card *I*. The card *F* is hung at the first part from *H*, and the card *G* at the 10th part from the same point: consequently, from the twisting and untwisting of the string *A* by the different changes of the air, the lower card *G*, from the mechanical principles of motion, will describe 10 revolutions for one of the upper card *F*; or, when the lower card *G* has made one revolution, the upper card *F* will have described but the 10th part, or one of its divisions. From whence it appears, that by the assistance of the upper card *F*, an index is thereby obtained of the number of revolutions the lower card *G* performs, which are reckoned by the line *E* on the slip of wood.

Example. It must first be observed what division of the card *F* the line *E* is against, suppose 3 and also what division of the lower card *G* is cut by the same line, suppose 10: it then appears, that the state of the hygrometer is thus, 3 degrees and 10 hundredths of another. If the whole 10 divisions of

the card *F* have passed the line *E*, the lower card *G* will have revolved 10 times, or 10 hundred parts, equal to 1000; the accuracy to which the principle of this simple contrivance answers. Before use, the hygrometer should be adjusted; to do which, the cards *F* and *G* are first set to the line *E* at the 0 of each, or commencement of the graduations: whatever direction the cards afterwards take, it must evidently be from the change to greater moisture or dryness in the air; and they will accordingly point it out.

On this principle, but with a degree of ingenuity and pains perhaps never before employed, an hygrometer has been constructed by M. de Saussure, professor of philosophy at Geneva. In his *Essais sur l'Hygrometrie*, in 4to, 1783, is an important detail on the subject of *hygrometry*; from which the following description of his hygrometer is taken. The author found by repeated experiments, that the difference between the greatest extension and contraction of a hair, properly prepared, and that has a weight of about three grains suspended to it, is nearly $\frac{1}{40}$ of its whole length; that is, $3\frac{1}{2}$, or $3\frac{3}{4}$ lines in a foot. This circumstance suggested the idea of a new hygrometer: And, in order to render those small variations perceptible and useful, the following apparatus was constructed.

Fig. 7. is a representation of the whole instrument, with the hair and other appendages complete. The lower extremity of the hair *ab* is held by the chaps of the screw pincers *b*. These pincers are represented aside at *B*: by a screw at its end, it fastens into the nut of the bottom plate *C*. This nut of the plate turns independently of the piece that supports it, and serves to raise or depress the pincers *B* at pleasure.

The upper extremity *a* of the hair is held by the under chaps of the double pincers *a*, represented aside at *A*. These pincers fasten the hair below, and above fastens a very fine narrow slip of silver, carefully annealed, which rolls round the arbor or cylinder *d*, a separate figure of which is shown at *DF*. This arbor, which carries the needle or index *ee*, or *E* in the separate figure, is cut in the shape of a screw; and the intervals of the threads of this screw have their bases flat, and are cut squarely so as to receive the slip of silver that is fastened to the pincers *a*, and joined in this manner with the hair. M. Saussure observes, that hair alone fixed immediately to the arbor would not do; for it curled upon it, and acquired a stiffness that the counterpoise was not able to surmount. The arbor was cut in a screw form, in order that the slip of silver in winding upon it should not increase the diameter of the arbor, and never take a situation too oblique and variable. The slip is fixed to the arbor by a small pin *F*. The other extremity of the arbor *D* is shaped like a pulley, flat at the bottom so as to receive a fine supple silken string, to which is suspended the counterpoise *g* in the large figure, and *G* in the side one. This counterpoise is applied to distend the hair; and acts in a contrary direction to that of the hair, and the moveable pincers to which the hair is fixed. If then the hair should be loaded with the weight of four grains, the counterpoise must weigh four grains more than the pincers. The arbor at one end passes through the centre of the dial, and turns therein, in a very fine hole, on a pivot made very cylindrical and well polished: at the other end is also a similar pivot, which turns in an hole.

Hygrom-
eter.

Hygrometer. hole made in the end of the arm *b* of the cock *b i*, H I. This cock is fixed behind the dial by means of the screw *l*.

The dial *k e e k*, divided into 360 degrees, is supported by two arms *l l*; these are soldered to two tubes, which inclose the cylindrical columns *m m m m*. The setting screws *n n* move upon these tubes, and serve thereby to fix the dial and arbor to any height required. The two columns which support the dial are firmly fastened to the case of the hygrometer, which rest upon the four screws *o o o o*; by the assistance of these screws, the instrument is adjusted, and placed in a vertical situation.

The square column *p p*, which rests upon the base of the hygrometer, carries a box *q*, to which is fixed a kind of port-crayon *r*, the aperture of which is equal to the diameter of the counterpoise *g*. When the hygrometer is to be moved from one place to another; to prevent a derangement of the instrument from the oscillations of the counterpoise, the box *q*, and the port-crayon *r*, must be raised up so as the counterpoise may fall into and be fixed in it, by tightening the screw *s* and the box and counterpoise together by the screw *t*. When the hygrometer is intended for use, the counterpoise must be disengaged by lowering the box, as may be conceived from the figure.

Lastly, at the top of the instrument is a curved piece of metal *x, y, z*, which is fastened to the three columns just described, and keeps them together. It has a square hole at *y*, which serves to hang up the hygrometer by when required.

The variations of which this hygrometer is capable, are (all things besides equal) as much greater as the arbor round which the slip of silver winds is than a smaller diameter, and as the instrument is capable of receiving a longer hair. M. Saussure has had hygrometers made with hairs 14 inches long, but he finds one foot sufficient. The arbor is three-fourths of a line in diameter at the base between the threads of the screw or the part on which the slip winds. The variations, when a hair properly prepared is applied to it, are more than an entire circumference, the index describing about 400 degrees in moving from extreme dryness to extreme humidity. M. Saussure mentions an inconvenience attending this hygrometer, viz. its not returning to the same point when moved from one place to another; because the weight of three grains that keeps the silver slip extended, cannot play so exactly as to act always with the same precision against the arbor round which it winds. But this weight cannot be sensibly increased without still greater inconveniences: he therefore observes, that this hygrometer is well calculated for a fixed situation in an observatory, and for various hygrometrical experiments; since, instead of the hair, there may be substituted any other substance of which a trial may be wanted; and it may be kept extended by a counterpoise more or less heavy as they may require: but the instrument will not admit of being moved, nor serve even for experiments which may subject it to agitation.

To obviate the objection above mentioned, M. Saussure has contrived another apparatus more portable and convenient, and which, if not so extensive in its variations, is in fact very firm, and not in the least liable to be deranged by carriage and agitation. Fig. 8. is a

representation of this hygrometer, which he calls the *portable hygrometer*, in distinction from the preceding, which he calls the *great hygrometer* or the *hygrometer with the arbor*. The material part of this instrument is its index *a b c e*; an horizontal view of which, and the arm that carries it, is seen in the separate figure GBDEF. This index carries in its centre D a thin tube hollow throughout, and projects out on each side of the needle. The axis which passes through it, and round which the index turns, is made thin in the middle of its length and thick at the ends; so that the cylindrical tube which it passes through touches it only at two points, and acts upon it only at its extremities.

The part *d e* DE of the index serves to point out and mark on the dial the degrees of moisture and dryness; the opposite part *d b* DB serves to fix both the hair and counterpoise. This part, which terminates in a portion of a circle, and is about a line in thickness, is cut on its edge in a double vertical groove, which makes this part similar to the segment of a pulley with a double neck. These two grooves, which are portions of a circle of two lines radius, and have the same centre with that of the index *d*, serve in one of them to contain the hair, and in the other the silk, to the end of which the counterpoise is suspended. The same index carries vertically above and below its centre two small screw-pincers, situated opposite to the two grooves: that above at *a*, opposite to the hindmost groove, serves to fix the silk to which the counterpoise is suspended; and that below at *b*, opposite to the hithermost groove, serves to hold one of the ends of the hair. Each of these grooves has its partitions cut, as seen in the section B, and its bottom made flat, in order that the hair and silk may have the greatest freedom possible. The axis of the needle DD goes thro' the arm *g f* GF, and it is fixed to this arm by the tightening screw *f F*. All the parts of the index should be in perfect equilibrium about its centre; so that when it is on its pivot without the counterpoise, it will rest indifferently in any position it may be placed in.

It must be understood, that when the hair is fixed by one of its extremities in the pincers *e*, and by the other end on the pincers *y* at top of the instrument, it passes in one of the necks of the double pulley *b*, whilst the counterpoise to which the silk is fixed in *a* passes in the other neck of the same pulley: the counterpoise serves to keep the hair extended, and acts always in the same direction and with the same force, whatever the situation of the index may be. When therefore the dryness contracts the hair, it overpowers the gravity of the counterpoise, and the index descends: when, on the contrary, the humidity relaxes the hair, it gives way to the counterpoise, and the index ascends. The counterpoise should weigh but three grains; so that the index should be made very light and very easy in its motion, in order that the least possible force may move it and bring it back again to its point when drawn aside.

The dial *h e b* is a circular arch, the centre of which is the same with that of the index. This arch is divided into degrees of the same circle, or into the hundredths of the interval which is found between the limits of extreme dryness and extreme humidity. The interior edge of the dial carries at the distance *h i* a kind

Hygrom-
eter.

kind of projecting bridle or stay *ii*, made of brass wire, curved to the arch, and fixed in the points *ii*. This bridle retains and guards the index, at the same time leaving it to play with the requisite freedom. The screw-pincers *y*, in which is fattened the upper extremity of the hair, is carried by a moveable arm, which ascends and descends at pleasure the length of the frame *KK*. This frame is cylindrical every where else, except its being here flattened at the hinder part to about half its thickness, in order that the piece with the screw which carries the arm should not project out underneath, and that the arm may not turn. The arm may be stopped at any desired height by means of the pressing screw *x*. But as it is of use sometimes to be able to give the instrument a very small and accurate motion, so as to bring the index exactly to the part that may be wanted, the slide piece *l*, which carries the pincers *y*, to which the hair is fixed, is to be moved by the adjusting screw *m*.

At the base of the instrument is a great lever *nopq*, which serves to fix the index and its counterpoise when the hygrometer is to be moved. The lever turns on an axis *n*, terminated by a screw which goes into the frame; in tightening this screw, the lever is fixed in the desired position. When the motion of the index is to be stopped, the intended position is given to this lever, as represented in the dotted lines of the figure. The long neck *p* of the lever lays hold of the double pulley *b* of the index, and the short neck *o* of the counterpoise: the tightening screw *q* fastens the two necks at once. In confining the index, it must be so placed, that the hair be very slack; so that, if whilst it is moved the hair should get dry, it may have room to contract itself. Afterwards, when the instrument is placed for use, the first thing to be done is to relax the screw *n*, and turn back the double lever with great care, taking equal caution at the same time not to strain the hair. It is better to apply one hand to the index near its centre, whilst the other hand is disengaging the pulley and the counterpoise from the lever that holds them steady. The hook *r* serves to suspend a thermometer upon; it should be a mercurial one, with a very small naked bulb or ball, so as to show in the most sensible manner the changes of the air: it should be mounted in metal, and guarded in such a manner as not to vibrate so as to break the hair. Lastly, a notch is made under the top of the frame *s*, to mark the point of suspension, about which the instrument is in equilibrium, and keeps a vertical situation.

All the instrument should be made of brass: though the axis of the index and its tube work more pleasantly together if made of bell metal.

The extent of this hygrometer's variations is not more than the fourth or fifth part of the hygrometer with the arbor. It may be augmented by making the segment of the pulley to which the hair is fixed of a smaller diameter; but then the hair, in moving about it, would fret and contract a stiffness, which would cause it to adhere to the bottom of the neck. M. Saussure is of opinion, that the radius of this pulley should not be less than two lines, at least that there should be adapted a plate of silver or some other contrivance; but then the hygrometer would be too difficult to construct, and it would require too much attention and care on the part of those who use it: his object was,

to make an instrument generally useful, and easy and convenient in its use. The hygrometer with the arbor may be used for observations which require an extreme sensibility.

The variations of this instrument may be augmented by making it higher, because in that case longer hairs might be adapted: but it would be then less portable. Besides, if the hair is too long when observations are made in the open air, the wind has too great an effect upon it, and thus communicates to the index inconvenient vibrations. It is not proper therefore to make it more than a foot in height. When it is of this dimension, an hair properly prepared can be applied to it, and its variations from extreme dryness to extreme humidity are 80 or even 100 degrees; which on a circle of 3 inches radius forms an extent sufficient for observations of this kind. M. Saussure has even made smaller instruments that may be carried conveniently in the pocket, and to make experiments with under small receivers: they were but seven inches high by two inches of breadth; which, notwithstanding their variations, were very sensible.

Thus much for the construction of the various parts of the instrument. The limits of this work will not admit of our inserting the whole of M. Saussure's subsequent account of the preparation of the hair, the manner of determining the limits of extreme humidity and of extreme dryness, the pyrometrical variations of the hair, and the graduation of the hygrometer. The following abstract must therefore suffice.

In the preparation of the hair, it was found necessary to free it of a certain unctuousity it always has in its natural state, which in a great measure deprives it of its hygrometrical sensibility. A number of hairs are boiled in a lye of vegetable alkali; and among these are to be chosen for use such as are most transparent, bright, and soft: particular precautions are necessary for preventing the straining of the hair, which renders it unfit for the intended purpose.

The two fixed points of the hygrometer are the extremes both of moisture and dryness. The former is obtained by exposing the instrument to air completely saturated with water; and this is effected by placing it in a glass receiver standing in water, the sides of which are kept continually moistened. The point on the dial, at which the hand after a certain interval remains stationary, is marked 100. The point of extreme dryness, not absolute dryness, for that does not exist, but the greatest degree of it that can be obtained, is produced by introducing repeatedly into the same receiver containing the instrument, and standing now upon quicksilver, certain quantities of deliquescent alkaline salts, which absorb the moisture of the air. The highest point to which the hand can be brought by this operation, not only when it will rise no higher, but when it becomes retrograde from the dilatation occasioned by heat, is called 0; and the arch between these two points is divided into 100 equal parts, being degrees of the hygrometer. The arch *pp*, upon which the scale is marked in the instrument (represented in fig. 2.) being part of a circle of three inches diameter; hence every degree measures about $\frac{1}{3}$ of a line. In the stationary hygrometer, fig. 1. the scale upon the complete circular dial is so much larger, that every degree

Hygrometer.

degree measures about five lines: but this M. Saussure considers as far from being a perfection, that it is rather an inconvenience; since the instrument becomes thereby so very susceptible of the least impression, that there is even no approaching it without a sensible variation. The thermometer, adapted as before mentioned, serves to correct the changes of temperature: towards the extreme dryness, 1° of the thermometer produces on the hair an effect of $\frac{1}{2}$ deg. of the hygrometer; but towards the extreme of moisture, the same difference of temperature causes an effect no less than 3° on the hygrometer. He constructed two tables, that gave the intermediate hygrometrical variations for single degrees of the thermometer at different parts of the scale.

The whole range of the atmospherical variations takes in about 75° of this scale; a dryness of more than 25° being always the effect of art. The sensibility of this instrument is so very great, that being exposed to the dew, he mentions that it varies above 40° in about 20 minutes of time. Being removed from a very moist into a very dry air, it varied in one instance no less than 35° in three minutes. He says that its variations were always found uniform in different instruments suspended in different parts of the same atmosphere. This hygrometer is considered by the author as possessed of all the properties requisite in such an instrument. These are, 1. That the degrees in the scale be sufficiently large, and to point out even the least variation in the dryness or moisture of the atmosphere. 2. That it be quick in its indications. 3. That it be at all times consistent with itself; viz. that in the same state of the hair it always points to the same degree. 4. That several of them agree with one another. 5. That it be affected only by the aqueous vapours. 6. That its variations be ever proportionate to the changes in the air.

Not many of these hygrometers have yet been made in London. A considerable degree of trouble and delicacy is requisite in the preparation of the hair, and it is very fragile; circumstances which may prevent it from coming into general use among common observers, although probably it may be the best in principle of any yet made.

II. On the second general principle, namely, that of the swelling of solid bodies by moisture, and their contraction by dryness, M. De Luc's instrument is the best. He makes choice of ivory for the construction of his hygrometer, because he finds, that, being once wetted, ivory regularly swells by moisture, and returns exactly to the same dimensions when the moisture is evaporated, which other bodies do not. This hygrometer is represented in fig. 9. where aab is an ivory tube open at the end a , and close at b . It is made of a piece of ivory taken at the distance of some inches from the top of a pretty large elephant's tooth, and likewise at the same distance from its surface, and from the canal which reaches to that point. (This particular direction is given, that the texture of the ivory in all different hygrometers may be the same, which is of great importance.) This piece is to be bored exactly in the direction of its fibres; the hole must be very straight, its dimensions $2\frac{1}{2}$ lines in diameter, and 2 inches 8 lines in depth from a to c . Its bore is then to be exactly filled with a brass cylinder, which, however, must pro-

ject somewhat beyond the ivory tube; and thus it is to be turned on a proper machine, till the thickness of the ivory is exactly $\frac{1}{4}$ of a line, except at the two extremities. At the bottom b the tube ends in a point; and at the top a it must for about two lines be left a little thicker, to enable it to bear the pressure of another piece put into it. Thus the thin or hygrometrical part of the tube will be reduced to $2\frac{1}{2}$ French inches, including the concavity of the bottom. Before this piece is used, it must be put into water, so that the external part alone may be wetted by it; and here it is to remain till the water penetrates to the inside, and appears in the form of dew, which will happen in a few hours. The reason of this is, that the ivory tube remains somewhat larger ever after it is wetted the first time.

For this hygrometer, a glass tube must be provided about 14 inches long, the lower end of which is shown in $ddee$. Its internal diameter is about $\frac{1}{4}$ of a line. If now the ivory tube is exactly filled with mercury, and the glass one affixed to it, as the capacity of the former decreases by being dried, the mercury will be forced up into the glass one.

The piece $ffgg$ is intended to join the ivory with the glass tube. It is of brass, shaped as in the figure. A cylindrical hole is bored through it, which holds the glass tube as tight as possible without danger of breaking it; and its lower part is to enter with some degree of difficulty into the ivory pipe. To hinder that part of the tube which incloses the brass piece from being affected by the variations of the moisture, it is covered with a brass vessel represented in $bbii$. The pieces must be united together with gum-lac or mastic.

The introduction of the mercury is the next operation. For this purpose, a slip of paper three inches wide is first to be rolled over the glass tube, and tied fast to the extremity nearest the ivory pipe. A horse-hair is then to be introduced into the tube, long enough to enter the ivory pipe by an inch, and to reach three or four inches beyond the extremity of the glass one. The paper which has been shaped round the tube must now be raised, and used as a funnel to pour the mercury into the instrument, which is held upright. The purest quicksilver is to be used for this purpose, and it will therefore be proper to use that revived from cinnamon. It easily runs into the tube; and the air escapes by means of the horse-hair, assisted with some gentle shakes. Fresh mercury must from time to time be supplied, to prevent the mercurial tube from being totally emptied; in which case, the mercurial pellicle which always forms by the contact of the air would run in along with it.

Some air-bubbles generally remain in the tube; they may be seen through the ivory pipe, which is thin enough to have some transparency. These being collected together by shaking, must be brought to the top of the tube, and expelled by means of the horse-hair. To facilitate this operation, some part of the mercury must be taken out of the tube, in order that the air may be less obstructed in getting out, and the horse-hair have a free motion to assist it. Air, however, cannot be entirely driven out in this manner. It is the weight of the mercury with which the tube is for that reason to be filled, which in time completes its

Hygrometer.

Hygrometer.

its expulsion, by making it pass through the pores of the ivory. To hasten this, the hygrometers are put into a proper box. This is fixed nearly in a vertical direction to the saddle of a horse, which is set a trotting for a few hours. The shakes sometimes divide the column of mercury in the glass tube, but it is easily re-united with the horse-hair. When, upon shaking the hygrometer vertically, no small tremulous motion is any longer perceived in the upper part of the column, one may be sure that all the air is gone out.

The scale of this hygrometer may be adjusted, as soon as the air is gone out, in the following manner. The instrument is to be suspended in a vessel of water cooled with ice, fresh quantities of which are to be added as the former melts. Here it is to remain till it has sunk as low as it will sink by the enlargement of the capacity of the ivory tube, owing to the moisture it has imbibed. This usually happens in seven or eight hours, and is to be carefully noted. In two or three hours the mercury begins to ascend, because the moisture passes into the cavity, and forces it up. The lowest station of the mercury is then to be marked 0; and for the more accurate marking the degrees on the scale, M. De Luc always chose to have his hygrometrical tube made of one which had formerly belonged to a thermometer. The reason of this is, that in the thermometer the expansion of the mercury by heat had been already determined. The distance between the thermometrical points of melting ice and boiling water at 27 French inches of the barometer was found to be 1937 parts. The bulb of this preparatory thermometer was broke in a basin, in order to receive carefully all the mercury that it contained. This being weighed in nice scales amounted to 1428 grains. The hygrometer contained 460 grains of the same mercury. Now it is plain, that the extent of the degrees on the hygrometer, ought to be to that of the degrees on the preparatory thermometer as the different weights of the mercury contained in each; consequently 1428 : 460 : 1937 : 624 nearly; and therefore the corresponding intervals ought to follow the same proportion; and thus the length of a scale was obtained, which might be divided into as many parts as he pleased.

Fig. 10. is a representation of De Luc's hygrometer when fully constructed. In elegance it far exceeds Smeaton's or any other, and probably also in accuracy; for by means of a small thermometer fixed on the board along with it, the expansion of the mercury by heat may be known with great accuracy, and of consequence how much of the height of the mercury in the hygrometer is owing to that cause, and how much to the mere moisture of the atmosphere.

M. De Luc having continued his inquiries further into the modifications of the atmosphere, mentions in his *Idée sur la Météorologie* another hygrometer, which he finds to be the best adapted to the measure of local humidity. Of all the hygroscopic substances which he tried for this purpose, that which answers the best is a slip of whalebone cut transversely to the direction of the fibres, and made extremely thin; for on this depends its sensibility. A slip of 12 inches in length and a line in breadth, he has made so thin as to weigh only half a grain; and it may be made still thinner, but is then of too great sensibility, being affected even by the approach of the obser-

ver. This slip is kept extended by a small spring, and the variations in its length are measured by a vernier division, or by, which is perhaps better, an index on a dial plate: the whole variation from extreme dryness to extreme moisture is about $\frac{1}{4}$ of its length.

These hygrometers are made by Mr Adams, and Mr W. Jones, London. The slip of whalebone is mounted in a frame very similar to that belonging to M. Saussure's hygrometer before described (see fig. 7.) The only material difference is, that a small concentric wire spring is used, instead of a counterpoise, to keep the slip of whalebone extended. M. Saussure had tried such a spring applied to his hairs; but the weakest spring he found too strong for the hair; and he was further apprehensive, that the variations which the cold, heat, and the weather infallibly make, would suffer from the force of the springs.

M. de Luc, in the hygrometers he formerly made, as before described (made of ivory), had graduated them from one fixed point only, that of extreme moisture, which is obtained by soaking them in water. He has now very ingeniously contrived to fix the other extreme, that of dryness: but this being producible only by means of strong fires, such as hygrometers cannot support, he uses an intermediate body, quicklime; which after having been deprived, by force of fire, of all its own humidity, has the property of slowly imbibing humidity again from the bodies in its neighbourhood; and whose capacity is such, that all the vapour that can be contained in a quantity of air equal to its own bulk, can give it no sensible humidity. These hygrometers, inclosed with a large quantity of fresh burnt lime in lumps, acquire in three weeks the same degree of dryness with the lime, which cannot differ sensibly from extreme dryness.

M. de Saussure makes choice of hairs, prepared by maceration in alkaline lye. M. de Luc shows that hairs, and all other animal or vegetable substances, taken lengthwise, or in the direction of their fibres, undergo contrary changes from different variations of humidity; that, when immersed in water, they lengthen at first, and afterwards shorten; that when they are near the greatest degree of humidity, if the moisture is increased, they shorten themselves; if it is diminished, they lengthen themselves first before they contract again. These irregularities, which obviously render them incapable of being true measures of humidity, he shows to be the necessary consequence of their organic reticular structure.

M. de Saussure takes his point of extreme moisture from the vapours of water under a glass bell, keeping the sides of the bell continually moistened: and affirms, that the humidity is there constantly the same in all temperatures; the vapours even of boiling water having no more effect than those of cold. M. de Luc shows, on the contrary, that the differences of humidity under the bell are very great, though M. Saussure's hygrometer was incapable of discovering them; and that the real undecomposed vapour of boiling water has the directly opposite effect to that of cold, the effect of extreme dryness: and on this point he mentions an interesting fact, communicated to him by Mr Watt, viz. that wood cannot be employed in the steam engine for any of those parts where the vapour of the boiling water is confined, because it dries

Hygrometer.

so as to crack, just as if exposed to the fire. In M. de Luc's work above mentioned there are striking instances related, in which the imperfection of M. Saussure's hygrometer led him into false conclusions respecting phenomena, and into erroneous theories to account for them.

III. On the third principle, namely, the alteration of the weight of certain substances by their attracting the moisture of the air, few attempts have been made, nor do they seem to have been attended with much success. Sponges dipped in a solution of alkaline salts, and some kinds of paper, have been tried. These are suspended to one end of a very accurate balance, and counterpoised by weights at the other, and show the degrees of moisture or dryness by the ascent or descent of one of the ends. But, besides that such kinds of hygrometers are destitute of any fixed point from whence to begin their scale, they have another inconvenience (from which indeed Smeaton's is not free, and which has been found to render it erroneous), namely, that all saline substances are destroyed by long continued exposure to the air in very small quantities, and therefore can only imbibe the moisture for a certain time. Oil of vitriol has therefore been recommended in preference to the alkaline or neutral salts (see CHEMISTRY, n° 614.); and, indeed, for such as do not chuse to be at the trouble of constructing a hygrometer on the principles of Mr Smeaton or De Luc, this will probably be found the most easy and accurate. Fig. 11. represents an hygrometer of this kind. A is a small glass cup containing a small quantity of oil of vitriol, B an index counterpoising it, and C the scale; where it is plain, that as the oil of vitriol attracts the moisture of the air, the scale will descend, which will raise the index, and *vice versa*. This liquid is exceedingly sensible of the increase or decrease of moisture. A single grain, after its full increase, has varied its equilibrium so sensibly, that the tongue of a balance, only an inch and a half long, has described an arch one third of an inch in compass (which arch would have been almost three inches if the tongue had been one foot), even with so small a quantity of liquor; consequently, if more liquor, expanded under a large surface, were used, a pair of scales might afford as nice an hygrometer as any kind yet invented.—A great inconvenience, however, is, that as the air must have full access to the liquid, it is impossible to keep out the dust, which, by continually adding its weight, must render the hygrometer false; add to this, that even oil of vitriol itself is by time destroyed, and changes its nature, if a small quantity of it is continually exposed to the air.

The best hygrometer upon this principle, and for ascertaining the quantity as well as the degree of moisture in the variation of the hygrometer, is of the contrivance of Mr Coventry, Southwark, London. The account he has favoured us with is as follows. "Take two sheets of fine tissue paper, such as is used by hatters; dry them carefully at about two feet distance from a tolerably good fire, till after repeatedly weighing them in a good pair of scales no moisture remains. When the sheets are in this perfectly dry state, reduce them to exactly 50 grains; the hygrometer is then fit for use. The sheets must be kept free from dust, and

exposed a few minutes in the open air; after which it may be always known by weighing them the exact quantity of moisture they have imbibed.

"For many years the hygrometer has (says Mr Coventry) engrossed a considerable share of my attention; and every advantage proposed by others, either as it respected the substances of which the instrument was composed, or the manner in which its operations were to be discerned, has been impartially examined. But (adds he) I have never seen an hygrometer so simple in itself, or that would act with such certainty or so equally alike, as the one I have now described. The materials of which it is composed being thin, are easily deprived wholly of their moisture; which is a circumstance essentially necessary in fixing a *datum* from which to reckon, and which, I think, cannot be said of any substance hitherto employed in the construction of hygrometers: with equal facility they imbibe or impart the humidity of the atmosphere, and show with the greatest exactness when the least alteration takes place."

When the paper is prepared, as already described, it will serve, without the trouble of drying, as a standard for any number of sheets intended for the same purpose. But then the sheets must be kept together in the open air for a few hours; because whatever alteration may take place by this exposure, the paper already weighed must have undergone the same; being consequently in the same state, they must be cut to the same weight.

For easier weighing the paper, take a piece of round tin or brass the size of a crown-piece, through the centre of which drill a hole, and also three others round it at equal distances: then cut about one hundred papers; and after putting them under the tin or brass, drive through each hole a strong pin into a board, in order to round them to the shape of the plate: the papers must be then separated and exposed to the air a few hours with that already weighed, and so many of them taken as are equal to the weight already specified. This done, threadle them together through those holes made by the pins, putting between every paper on each thread a small bead, in order to prevent the papers from touching each other, and also that the air may be more readily admitted. The top of the hygrometer is covered with a card cut to the same size; and which, by reason of its stiffness, supports all the papers, and keeps them in proper shape. Before the papers are threaded, the beads, silk, card, and a thin piece of brass about the size of a sixpence, which must be placed at the bottom, and through which the centre string passes, must be weighed with the greatest exactness, in order to bring them to a certain weight, suppose 50 grains; now the paper in its driest state being of equal weight, they will weigh together 100 grains, consequently what they weigh more at any time is moisture.

To obviate the trouble and difficulty of trying experiments with weights and scales, Mr Coventry contrived a machine or scale by which to determine at one view the humidity or dryness of the atmosphere. This, with its case, is represented by fig. 12. The front and back of the case are glass; the sides fine gauze, which excludes the dust and admits the air; the

Hygrometer.

Hygrometer. the case is about 10 inches high, 8 inches broad, and 4 inches deep. A, a brass bracket in front, behind which, at about $3\frac{1}{2}$ inches distance, is another; these support the axis of the index E, also of the beam D, and another which supports the stem B, to which the ivory scale of divisions C is fixed. G, a brass scale suspended in the usual manner to the end of a beam D, and weighing exactly 100 grains. This scale is an exact counterpoise to the papers I and the different apparatus. The particular manner of suspension in this balance is, from the construction, as follows: The axis of the beam g, which is made of brass, instead of hanging on pivots as in common scales, turns with two steel edges *kk*, fixed in the extremities of the brass axis: these edges are shaped like the edge of a knife, and act on two steel concave edges *ll*, in order to render the friction as small as possible. D is a fine scale beam fixed at right angles with the axis g. E, the steel index fixed to the under side of the same axis. F, a brass sliding weight: *h* is the axis that holds the stem B to which the scale of divisions C is fixed. AA, the brass brackets which support the whole by four screws, two of which are seen at *ii*, that screw the brackets to the top of the case. The axis of the scale of divisions is hung on pivots, one of which is seen at *m*, that, should the case not stand level, the stem B may always be in a perpendicular situation.

The hygrometer, before use, should be adjusted as follows: To the end of the beam where the hygrometer is suspended, hang a weight of 100 grains, which is equal to the weight of the scale; then move the sliding weight F up or down the index E, till one grain will cause the index to traverse neither more nor less than the whole scale of divisions; then add half a grain to the scale, in order to bring the index to 0; and the instrument, after taking off the 100 grain weight and hanging on the papers, is fit for use; then put grain weights in the scale till the index is brought within compass of the scale of divisions. Example: H is 3 grains on the brass scale, and the index points at 10; consequently there is 3 grains and 10 hundredths of a grain of moisture in the papers. If four grain-weights are kept, viz. 1, 2, 4, and 5, they will make any number from 1 to 9, which are as many as will be wanted. Sometimes the index will continue traversing within the scale of divisions for many days without shifting the weights; but if otherwise, they must be changed as occasion may require.

"One great advantage of this hygrometer above all others that have attracted my notice is (says Mr Coventry), that it acts from a certain datum, namely, the dry-extreme; from which all the variations towards moist are calculated with certainty: and if constructed with that precision represented by the drawing, it will afford pleasure to the curious in observing the almost perpetual alteration of the atmosphere, even in the most settled weather. In winter it will be constantly traversing from about eight in the morning till four or five in the afternoon, towards *dry*; and in summer, from about four in the morning till six or seven in the evening, when the weather is hot and gloomy, the hygrometer discovers a very great change towards moisture; and when clear and frosty, that it contains a much greater quantity of moisture than is generally imagined."

N^o 161.

HYGROSCOPE. The same with **HYGROMETER**. **Hygroscope** Hymen.

HYLA (anc. geog.), a river of Myfia Minor, famous for Hylas the favourite boy of Hercules, who was carried down the stream and drowned. It is said to run by Prusa; whence it seems to be the same with the *Rhyndacus*, which runs north-west into the Propontis.

HYLAS, in fabulous history, son of Theodamnus, was ravished by the nymphs of a fountain as he was taking out some water for Hercules, by whom he was beloved.

HYLOZOISTS, formed of *υλη* matter, *ζωη* life, the name of a sect of atheists among the ancient Greek philosophers, who held matter to be animated; maintaining that matter had some natural perception, without animal sensation, or reflection in itself considered; but that this imperfect life occasioned that organization whence sensation and reflection afterwards arose. Of these, some held only one life, which they called a PLASTIC nature, presiding regularly and invariably over the whole corporeal universe, which they represented as a kind of large plant or vegetable: these were called the cosmoplastic and stoical atheists, because the Stoics held such a nature, though many of them supposed it to be the instrument of the Deity. Others thought that every particle of matter was endued with life, and made the mundane system to depend upon a certain mixture of chance and plastic or orderly nature united together. These were called the Stratonici, from Strato Lampiscenus, a disciple of Theophrastus, called also Physicus, (Cicero, De Nat. Deor. lib. i. cap. 13.) who was first a celebrated Peripatetic, and afterwards formed this new system of atheism for himself. Besides these two forms of atheism, some of the ancient philosophers were Hylopathians, or ANAXIMANDRIANS, deriving all things from dead and stupid matter, in the way of qualities and forms, generable and corruptible; and others again adopted the AROMICAL or Democritical system, who ascribe the production of the universe to atoms and figures. See on this subject *Cudworth's Intellectual System*, book i. chap. 3.

HYMEN, or **HYMENÆUS**, a fabulous divinity, the son of Bacchus and Venus Urania, was supposed by the ancients to preside over marriages; and accordingly was invoked in epithalamiums, and other matrimonial ceremonies, under the formula, *Hymen, or Hymenæe!*

The poets generally crown this deity with a chaplet of roses; and represent him, as it were, dissolved and enervated with pleasures; dressed in a yellow robe, and shoes of the same colour; with a torch in his hand.—Catullus, in one of his epigrams, addresses him thus:

*Cinge tempora floribus,
Suaveolentis amaranthi.*

It was for this reason, that the new-married couple bore garlands of flowers on the wedding-day: which custom also obtained among the Hebrews, and even among Christians, during the first ages of the church, as appears from Tertullian, *De corona militari*, where he says, *Coronant & nuptæ sponsores*.—S. Chrysostom likewise mentions these crowns of flowers; and to this day the Greeks call marriage *σπονδομυα*, in respect of this crown or garland.

HYMEN,

HYGROMETER.

Plate CCXLVI.

Fig. 3.

Fig. 1. Fig. 2. Fig. 9.

Fig. 4.

Fig. 5.



Fig. 11.

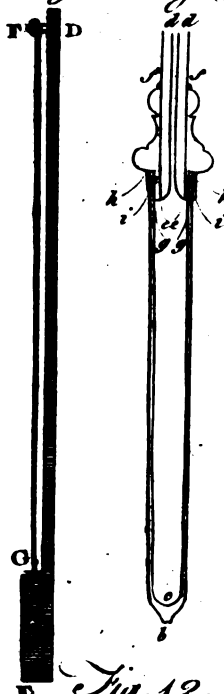
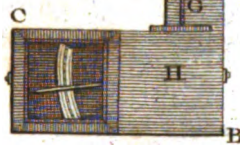
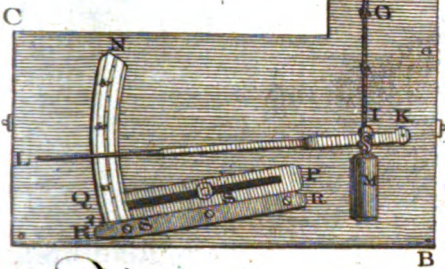
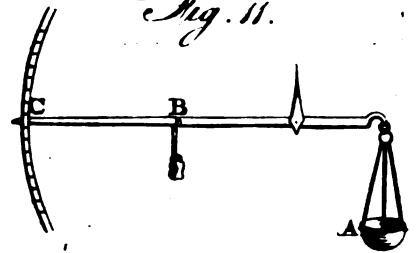
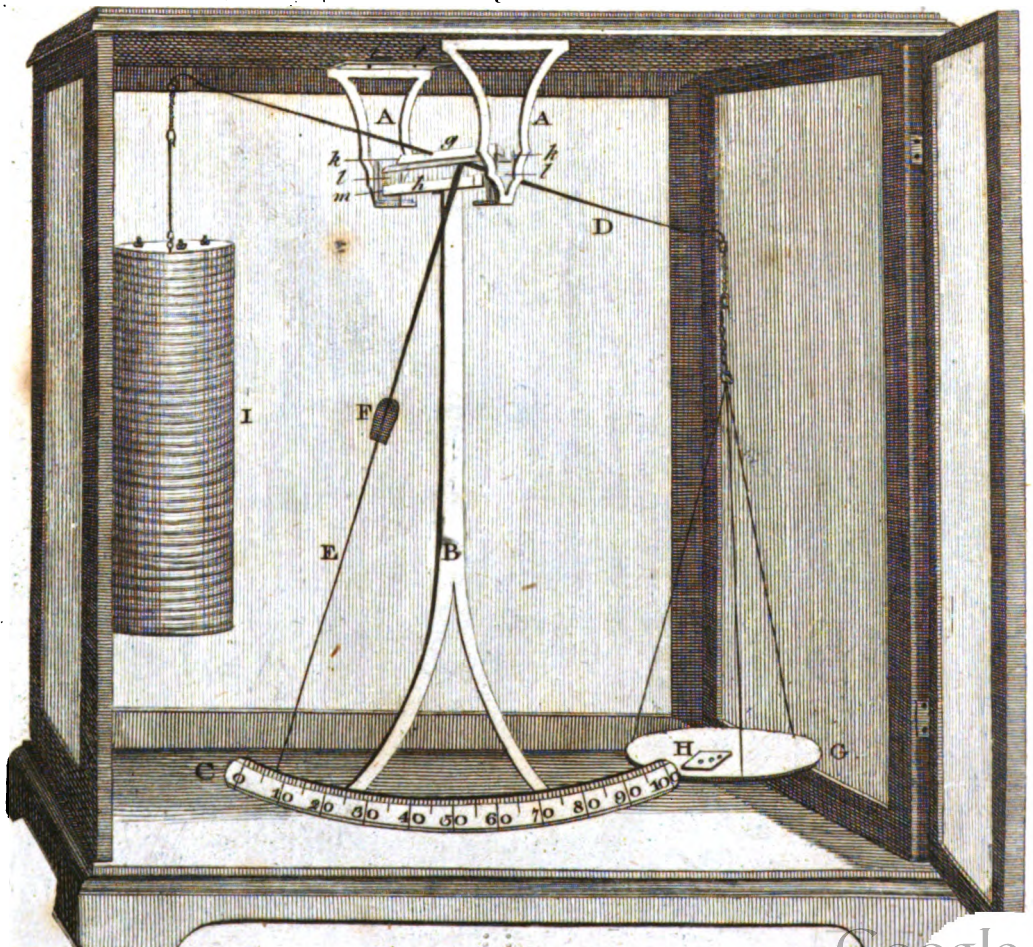
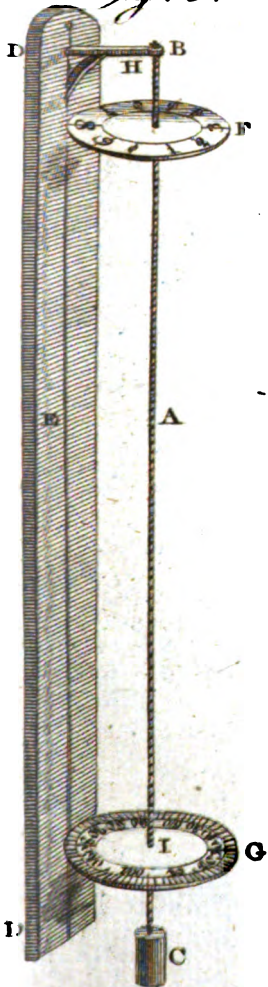


Fig. 12.

Fig. 6.



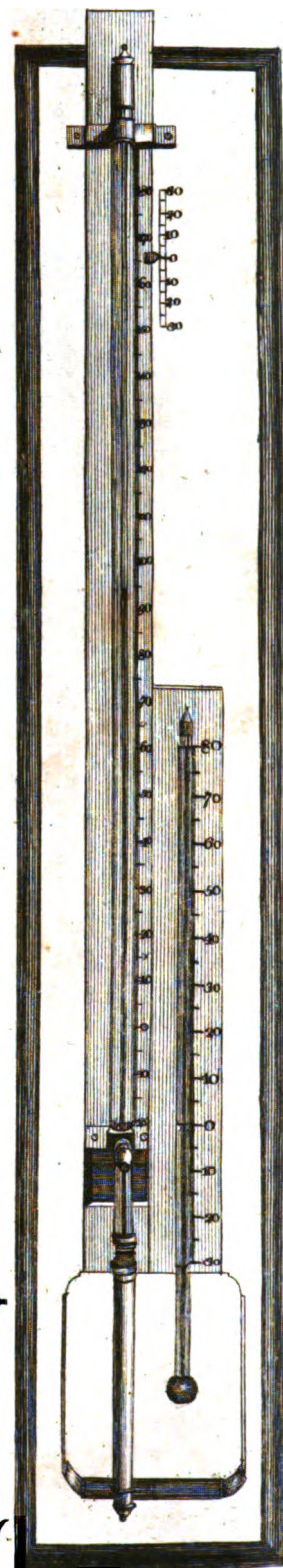
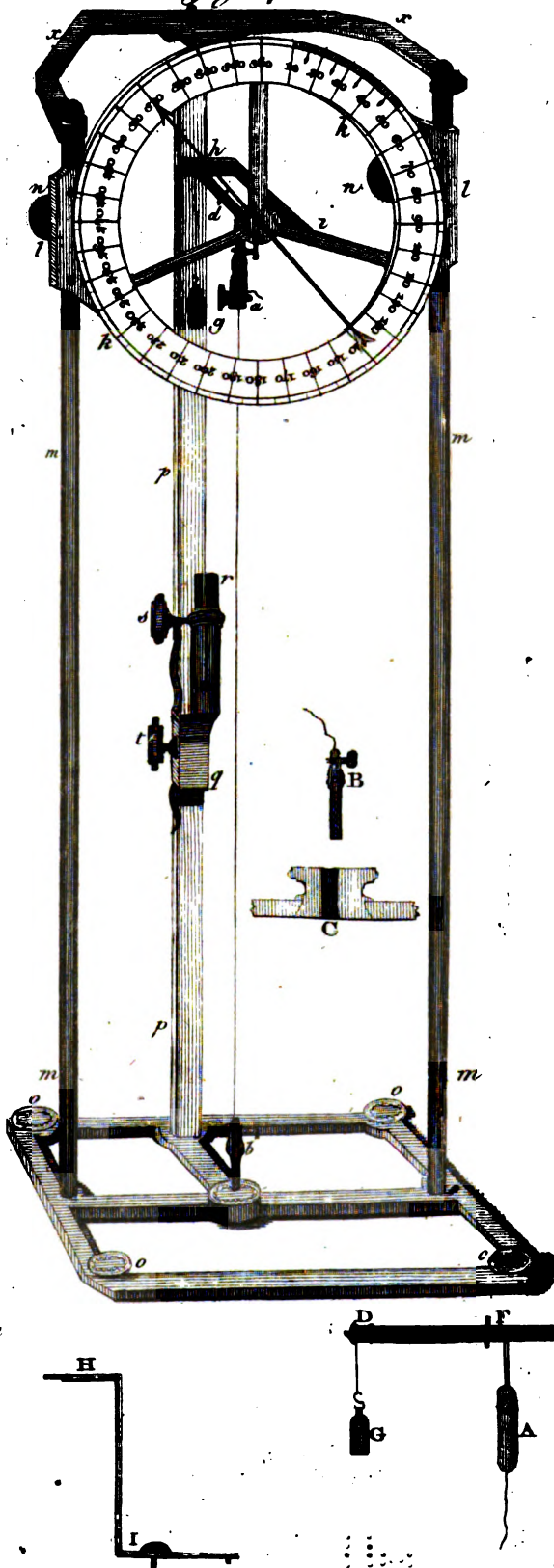
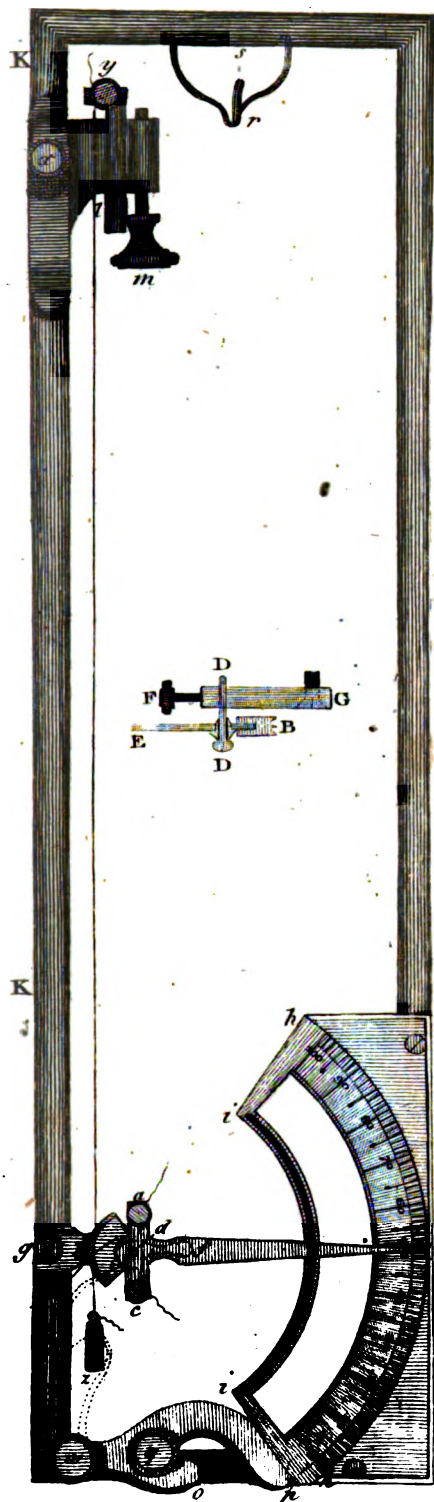
HYGROMETER.

Plate CCXLVII.

Fig. 7.

Fig. 10.

Fig. 8.



W. Hall Print. at. Sculptor. fecit.

NU

Hymen.

HYMEN, *ἤμην*, in anatomy, a thin membrane or skin, sometimes circular, of different breadths, more or less smooth, and sometimes semilunar, formed by the union of the internal membrane of the great canal with that on the inside of the alæ, resembling a piece of fine parchment. This membrane is supposed to be stretched in the neck of the womb of virgins, below the nymphæ, leaving in some subjects a very small opening, in others a larger, and in all rendering the external orifice narrower than the rest of the cavity, and to be broke when they are deflowered; an effusion of blood following the breach.

This membranous circle may likewise suffer some disorder by too great a flux of the menses, by imprudence, levity, and other particular accidents.

The hymen is generally looked upon as the test of virginity; and when broke, or withdrawn, shows that the person is not in a state of innocence. This notion is very ancient. Among the Hebrews, it was the custom for the parents to save the blood shed on this occasion as a token of the virginity of their daughter, and to send the sheets next day to the husband's relations. And the like is said to be still practised in Portugal, and some other countries.

And yet authors are not agreed as to the existence of such a membrane. Nothing, Dr Drake observes, has employed the curiosity of anatomists, in dissecting the organs of generation in women, more than this part: they have differed not only as to its figure, substance, place, and perforation, but even its reality; some positively affirming, and others flatly denying it.

De Graaf himself, the most accurate inquirer into the structure of these organs, confesses he always sought it in vain, though in the most unsuspected subjects and ages: all he could find was, a different degree of straitness or wideness, and different corrugations, which were greater or less according to the respective ages; the aperture being still the less, and the rugosities the greater, as the subject was younger and more untouched.

Dr Drake, on the other hand, declares, that in all the subjects he had opportunity to examine, he does not remember to have missed the hymen so much as once, where he had reason to depend on finding it. The fairest view he ever had of it was in a maid who died at thirty years of age; in this he found it a membrane of some strength, furnished with fleshy fibres, in figure round, and perforated in the middle with a small hole, capable of admitting the end of a woman's little finger, and situated a little above the orifice of the urinary passage, at the entrance of the vagina of the womb.

In infants, it is a fine thin membrane, not very conspicuous, because of the natural straitness of the passage itself, which does not admit of any great expansion in so little room; which might lead De Graaf into a notion of its being no more than a corrugation.

This membrane, like most others, does probably grow more distinct, as well as firm, by age. That it not only exists, but is sometimes very strong and impervious, may be collected from the history of a case reported by Mr Cowper. In a married woman, twenty years of age, whose hymen was found altogether impervious, so as to detain the menses, and to be driven out by the pressure thereof beyond the labia of the pudendum, not unlike a prolapsus of the uterus; on divi-

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ding it, at least a gallon of grumous blood came forth. It seems the husband, being denied a passage that way, had found another through the *meatus urinarius*; which was found very open, and its sides extruded like the anus of a cock.

Upon a rupture of the hymen, after the consummation of marriage, and especially delivery, its parts, shrinking up, are supposed to form those little fleshy knots, called *CARUNCULÆ myrtiformes*.

HYMENÆA, the BASTARD LOCUST TREE: A genus of the monogynia order, belonging to the decandria class of plants; and in the natural method ranking under the 33d order, *Lomentaceæ*. The calyx is quinquepartite; there are five petals, nearly equal; the style is intorted; the legumen full of mealy pulp. There is but one species, the courbaril, which is a large tree, growing naturally in the Spanish West India. The trunk is covered with a light ash-coloured bark, is often more than 60 feet high and three in diameter. The branches are furnished with dark green leaves, which stand by pairs on one common footstalk, diverging from their base in manner of a pair of shears when opened. The flowers come out in loose spikes at the ends of the branches, and are yellow, striped with purple. Each consists of five petals, placed in a double calyx, the outer leaf of which is divided into five parts, and the inner one is cut into five teeth at its brim. In the centre are ten declining stamina, longer than the petals, surrounding an oblong germen, which becomes a thick, fleshy, brown pod, four or five inches long and one broad, with a suture on both edges, and includes three or four purplish seeds, somewhat of the shape of Windsor beans, but smaller. The seeds are covered with a light brown sugary substance, which the Indians scrape off and eat with great avidity, and which is very pleasant and agreeable.—At the principal roots under ground, is found collected in large lumps a yellowish red transparent gum, which dissolved in rectified spirit of wine affords a most excellent varnish, and is the gum anime of the shops.

HYMENÆAL, something belonging to marriage; so called from **HYMEN**.

HYMENOPTERA (derived from *ὑμην* membrane, and *πτερον* wing), in the Linnæan system of natural history, is an order of insects, having four membranaceous wings, and the tails of the females are furnished with stings, which in some are used for instilling poison, and in others for merely piercing the bark and leaves of trees, and the bodies of other animals, in which they deposit their eggs.

HYMETTUS (anc. geog.), a mountain of Attica near Athens, famous for its marble quarries, and for its excellent honey. *Hymettus* the epithet. Pliny says that the orator Crassus was the first who had marble columns from this place.

HYMN, a song or ode in honour of God; or a poem, proper to be sung, composed in honour of some deity.—The word is Greek, *ὑμνος* *hymn*, formed of the verb *ὑμνέω* *celebro*, "I celebrate."—Isidore, on this word, remarks, that *hymn* is properly a song of joy, full of the praises of God: by which, according to him, it is distinguished from *threnna*, which is a mourning song, full of lamentation.

St Hilary, bishop of Poitiers, is said to have been

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the

Hyobanche the first that composed hymns to be sung in churches, and was followed by St Ambrose. Most of those in the Roman Breviary were composed by Prudentius. They have been translated into French verse by Messieurs de Port Royal.—In the Greek Liturgy there are four kinds of hymns; but the word is not taken in the sense of a praise offered in verse, but simply of a laud or praise. The angelic hymn, or *Gloria in excelsis*, makes the first kind; the *trifagion* the second; the *Cherubic hymn*, the third; and the hymn of *victory* and *triumph* called *trivixion*, the last.

The hymns or odes of the ancients generally consisted of three sorts of stanzas; one of which, called *strophè*, was sung by the band as they walked from east to west; another, called *antistrophè*, was performed as they returned from west to east; the third part, or *epode*, was sung before the altar. The Jewish hymns were accompanied with trumpets, drums, and cymbals, to assist the voices of the Levites and people.

HYOBANCHE, in botany: A genus of the angiospermia order, belonging to the didynamiac class of plants. The calyx is heptaphyllous; the corolla ringent, with no under lip. The capsule bilocular, and polyspermous.

HYOIDES, in anatomy, a bone placed at the root of the tongue. See *ANATOMY*, n° 28.

HYOSCYAMUS, **HENBANE**: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 28th order, *Luride*. The corolla is funnel-shaped and obtuse; the stamina inclining to one side; the capsule covered and bilocular. There are several species, one of which, *viz.* the niger, or common henbane, is a native of Britain. It grows on road-sides, and among rubbish. It is a biennial plant, with long fleshy roots which strike deep into the ground, sending out several large soft leaves, deeply slashed on their edges; the following spring the stalks come up, which are about two feet high, garnished with flowers standing on one side in a double row, sitting close to the stalks alternately. They are of a dark purplish colour, with a black bottom; and are succeeded by roundish capsules which open with a lid at the top, and have two cells filled with small irregular seeds.—The seeds, leaves, and roots of this plant, as well as of all other species of this genus, are poisonous: and many well attested instances of their bad effects are recorded; madness, convulsions, and death, being the common consequence. In a smaller dose, they occasion giddiness and stupor. It is said that the leaves scattered about a house will drive away mice.—The juice of the plant evaporated to an extract is prescribed in some cases as a narcotic; in which respect undoubtedly it may be a powerful medicine if properly managed. The dose is from half a scruple to half a dram. The roots are used for anodyne necklaces.—Goats are not fond of the plant; horses, cows, sheep, and swine, refuse it.

HYOSERIS, in botany: A genus of the polygamia æqualis order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Composita*. The receptacle is naked, the calyx nearly equal; the pappus hairy, or scarce perceptible.

HYO-THYROIDES, in anatomy, one of the

muscles belonging to the os hyoides. See *ANATOMY*, *Hypallage Table of the Muscles*.

HYPALLAGE, among grammarians, a species of hyperbaton, consisting in a mutual permutation of one case for another. Thus Virgil says, *Dare classes austros*, for *dare classes austris*; and again, *Necdum illis labra admovi*, for *necdum illa labris admovi*.

HYPANTE, or **HYPERPANTE**, a name given by the Greeks to the feast of the presentation of Jesus in the temple.—This word, which signifies *lowly* or *humble meeting*, was given to this feast from the meeting of old Simeon and Anna the prophetess in the temple when Jesus was brought thither.

HYPATIA, a learned and beautiful lady of antiquity, the daughter of Theon a celebrated philosopher and mathematician, and president of the famous Alexandrian school, was born at Alexandria about the end of the fourth century. Her father, encouraged by her extraordinary genius, had her not only educated in all the ordinary qualifications of her sex, but instructed in the most abstruse sciences. She made such great progress in philosophy, geometry, astronomy, and the mathematics, that she passed for the most learned person of her time. At length she was thought worthy to succeed her father in that distinguished and important employment, the government of the school of Alexandria; and to teach out of that chair where Ammonius, Hierocles, and many other great men, had taught before; and this at a time too when men of great learning abounded both at Alexandria and in many other parts of the Roman empire. Her fame was so extensive, and her worth so universally acknowledged, that we cannot wonder if she had a crowded auditory. “She explained to her hearers (says Socrates) the several sciences that go under the general name of philosophy; for which reason there was a confluence to her, from all parts, of those who made philosophy their delight and study.” One cannot represent to himself without pleasure, the flower of all the youth of Europe, Asia, and Africa, sitting at the feet of a very beautiful lady (for such we are assured Hypatia was), all greedily swallowing instruction from her mouth, and many of them, doubtless, love from her eyes; though we are not sure that she ever listened to any solicitations, since Suidas, who talks of her marriage with Isidorus, yet relates at the same time that she died a maid.

Her scholars were as eminent as they were numerous; one of whom was the celebrated Synesius, who was afterwards bishop of Ptolemais. This ancient Christian Platonist every where bears the strongest, as well as the most grateful, testimony of the virtue of his tutorefs; and never mentions her without the most profound respect, and sometimes in terms of affection, coming little short of adoration. But it was not Synesius only, and the disciples of the Alexandrian school, who admired Hypatia for her virtue and learning: never was woman more caressed by the public, and yet never woman had a more unspotted character. She was held as an oracle for her wisdom, which made her consulted by the magistrates in all important cases; and this frequently drew her among the greatest concourse of men, without the least censure of her manners. In a word, when Nicephorus intended to pass the highest compliment on the princess Eudocia, he thought

Hypatia
||
Hyperbaton.

thought he could not do it better than by calling her another *Hypatia*.

While Hypatia thus reigned the brightest ornament of Alexandria, Orestes was governor of the same place for the emperor Theodosius, and Cyril was bishop or patriarch. Orestes having had a liberal education, could not but admire Hypatia; and as a wife governor frequently consulted her. This, together with an aversion which Cyril had against Orestes, proved fatal to the lady. About 500 monks assembling, attacked the governor one day, and would have killed him, had he not been rescued by the townsmen; and the respect which Orestes had for Hypatia causing her to be traduced among the Christian multitude, they dragged her from her chair, tore her to pieces, and burned her limbs. Cyril is not clear from a suspicion of fomenting this tragedy. He indeed endeavours to remove the imputation of such an horrid action from the patriarch; and lays it upon the Alexandrian mob in general, whom he calls *levissimum hominum genus*, "a very trifling inconstant people." But though Cyril should be allowed neither to have been the perpetrator, nor even the contriver of it, yet it is much to be suspected that he did not discountenance it in the manner he ought to have done: which suspicion must needs be greatly confirmed by reflecting, that he was so far from blaming the outrage committed by the monks upon Orestes, that he afterwards received the dead body of Ammonius, one of the most forward in that outrage, who had grievously wounded the governor, and who was justly punished with death. Upon this riotous ruffian Cyril made a panegyric in the church where he was laid, in which he extolled his courage and constancy, as one that had contended for the truth; and changing his name to *Thaumastus*, or the "Admirable," ordered him to be considered as a martyr. "However, (continues Socrates), the wisest part of Christians did not approve the zeal which Cyril showed on this man's behalf, being convinced that Ammonius had justly suffered for his desperate attempt."

HYPECUM, WILD CUMIN: A genus of the digynia order, belonging to the tetrandria class of plants; and in the natural method ranking under the 24th order, *Corydalis*. The calyx is diphyllous; the petals four; the exterior two larger and trifid; the fruit a pod. There are four species, all of them low herbaceous plants with yellow flowers. The juice of these plants is of a yellow colour, resembling that ofcelandine, and is affirmed by some eminent physicians to be as narcotic as opium. From the nectarium of the blossom the bees collect great quantities of honey. All the species are easily propagated by seeds.

HYPER, a Greek preposition frequently used in composition, where it denotes excess; its literal signification being *above*, or *beyond*.

HYPERBATON, in grammar, a figurative construction inverting the natural and proper order of words and sentences. The several species of the hyperbaton are, the anastrophe, the hysteron-proteron, the hypallage, synchysis, tmesis, parenthesis, and the hyperbaton strictly so called. See **ANASTROPHE**, &c.

HYPERBATON, strictly so called, is a long retention

of the verb which completes the sentence, as in the following example from Virgil:

*Interea Reges : ingenti mole Latinus
Quadrifido vebitur curra, cui tempora circum
Aurati bis sex radii fulgentia cingunt,
Solis avi specimen : bigis ut Turnus in albis,
Bina manu lato crispans bastilia ferro :
Hinc Pater Aeneas, Romana stirpis origo,
Sidereo flagrans clypeo et celestibus armis ;
Et juxta Ascanius, magna spes altera Roma :
Procedunt castris.*

HYPERBOLA, a curve formed by cutting a cone in a direction parallel to its axis. See **CONIC SECTIONS**.

HYPERBOLE, in rhetoric, a figure, whereby the truth and reality of things are excessively either enlarged or diminished. See **ORATORY**, n° 58.

An object uncommon with respect to size, either very great of its kind or very little, strikes us with surprise; and this emotion forces upon the mind a momentary conviction that the object is greater or less than it is in reality: the same effect, precisely, attends figurative grandeur or littleness; and hence the hyperbole, which expresses this momentary conviction. A writer, taking advantage of this natural delusion, enriches his description greatly by the hyperbole: and the reader, even in his coolest moments, relishes this figure, being sensible that it is the operation of nature upon a warm fancy.

It cannot have escaped observation that a writer is generally more successful in magnifying by a hyperbole than in diminishing. The reason is, that a minute object contracts the mind, and fetters its powers of imagination; but that the mind, dilated and inflamed with a grand object, moulds objects for its gratification with great facility. Longinus, with respect to a diminishing hyperbole, cites the following ludicrous thought from a comic poet: "He was owner of a bit of ground not larger than a Lacedaemonian letter." But, for the reason now given, the hyperbole has by far the greater force in magnifying objects; of which take the following examples:

For all the land which thou seest, to thee will I give it, and to thy seed for ever. And I will make thy seed as the dust of the earth: so that if a man can number the dust of the earth, then shall thy seed also be numbered. *Gen. xiii. 15. 16.*

*Illa vel intactæ segetis per summa volaret
Gramina : nec teneras curfu læsisset aristas.*
Æneid. vii. 808.

Atque imo barathri ter gurgite vastos
Sorbet in abruptum fluctus, rursusque sub auras
Erigit alternos, et sidera verberat unda.

Æneid. iii. 421.

Horrificis juxta tonat Ætna ruinis,
Interdumque atram prorumpit ad æthera nubem,
Turbine fumantem picco et candente favilla :
Attollitque globos flammæ, et sidera lambit.

Æneid. iii. 571.

Speaking of Polyphemus,

Ipse arduus, altaque pulsat
Sidera.

Æneid. iii. 619.

F 2

—When

Hyperbolas
Hyperbole.

Elements of
Criticisms.

Hyperbole.

When he speaks,
The air, a charter'd libertine, is still.

Henry V. act 1. sc. 1.

Now shield with shield, with helmet helmet clos'd,
To armour armour, lance to lance oppos'd,
Host against host with shadowy squadrons drew,
The sounding darts in iron tempests flew,
Victors and vanquish'd join promiscuous cries,
And thrilling shouts and dying groans arise ;
With streaming blood the slipp'ry fields are dy'd,
And slaughter'd heroes swell the dreadful tide.

Iliad iv. 508.

Quintilian is sensible that this figure is natural : " For (says he), not contented with truth, we naturally incline to augment or diminish beyond it ; and for that reason the hyperbole is familiar even among the vulgar and illiterate : " and he adds, very justly, " That the hyperbole is then proper, when the object of itself exceeds the common measure. " From these premises, one would not expect the following inference, the only reason he can find for justifying this figure of speech, " Conceditur enim amplius dicere, quia dici quantum est, non potest : meliusque ultra quam citra stat oratio. " (We are indulged to say more than enough, because we cannot say enough ; and it is better to be above than under.) In the name of wonder, why this slight and childish reasoning, when immediately before he had observed, that the hyperbole is founded on human nature ? We could not resist this personal stroke of criticism ; intended not against our author, for no human creature is exempt from error ; but against the blind veneration that is paid to the ancient classic writers, without distinguishing their blemishes from their beauties.

Having examined the nature of this figure, and the principle on which it is erected ; let us proceed to the rules by which it ought to be governed. And, in the first place, it is a capital fault to introduce an hyperbole in the description of an ordinary object or event ; for in such a case, it is altogether unnatural, being destitute of surprise, its only foundation. Take the following instance, where the subject is extremely familiar, viz. swimming to gain the shore after a shipwreck.

I saw him beat the surges under him,
And ride upon their backs : he trod the water ;
Whose enmity he flung aside, and breast'd
The surge most swoln that met him : his bold head
Bove the contentious waves he kept, and oar'd
Himself with his good arms, in lusty strokes
To th' shore, that o'er his wave-born basis bow'd,
As slooping to relieve him. *Tempest, act 2. sc. 1.*

In the next place, it may be gathered from what is said, that an hyperbole can never suit the tone of any dispiriting passion : sorrow in particular will never prompt such a figure, and for that reason the following hyperboles must be condemned as unnatural :

K. Rich. Aumerle, thou weep'st, my tender-hearted cousin !

We'll make foul weather with despised tears ;
Our sighs, and they, shall lodge the summer-corn,
And make a dearth in this revolving land.

Richard II. act 3. sc. 6.

Hyperbole. Draw them to Tyber's bank, and weep your tears
Into the channel, till the lowest stream
Do kiss the most exalted shores of all.

Julius Caesar, act 1. sc. 1.

Thirdly, A writer, if he wish to succeed, ought always to have the reader in his eye : he ought, in particular, never to venture a bold thought or expression, till the reader be warmed and prepared. For this reason, an hyperbole in the beginning of a work can never be in its place. Example :

Jam pauca aratro jugera regiz

Moles relinquunt.

Horat. Carm. lib. 2. ode 15.

In the fourth place, The nicest point of all, is to ascertain the natural limits of an hyperbole, beyond which being overstrained, it has a bad effect. Longinus (chap. iii.), with great propriety of thought, enters a caveat against an hyperbole of this kind : he compares it to a bow-string, which relaxes by overstraining, and produceth an effect directly opposite to what is intended. To ascertain any precise boundary, would be difficult, if not impracticable. We shall therefore only give a specimen of what may be reckoned overstrained hyperboles. No fault is more common among writers of inferior rank ; and instances are found even among those of the finest taste ; witness the following hyperbole, too bold even for an Hotspur.

Hotspur talking of Mortimer :

In single opposition hand to hand,
He did confound the best part of an hour
In changing hardiment with great Gleadower.
Three times they breath'd, and three times did they drink,
Upon agreement, of swift Severn's flood ;
Who then affrighted with their bloody looks,
Ran fearfully among the trembling reeds,
And hid his crisp'd head in the hollow bank,
Blood-stained with these valiant combatants.

First Part Henry IV. act 1. sc. 4.

Speaking of Henry V.

England ne'er had a King until his time.
Virtue he had, deserving to command :
His brandish'd sword did blind men with its beams :
His arms spread wider than a dragon's wings :
His sparkling eyes, replete with awful fire,
More dazzled, and drove back his enemies,
Than mid-day sun fierce bent against their faces.
What should I say ? his deeds exceed all speech :
He never lifted up his hand, but conquer'd.

First Part Henry VI. act 1. sc. 1.

Lastly, An hyperbole, after it is introduced with all advantages, ought to be comprehended within the fewest words possible : as it cannot be relished but in the hurry and swelling of the mind, a leisurely view dissolves the charm, and discovers the description to be extravagant at least, and perhaps also ridiculous. This fault is palpable in a sonnet which passeth for one of the most complete in the French language : Phillis, in a long and florid description, is made as far to outshine the sun as he outshines the stars :

Le silence regnoit sur la terre et sur l'onde,
L'air devenoit serain et l'Olimp vermeil,

4.

Et.

Hyperbo-
rean
Hyperi-
critic.

Et l'amoureux Zephir affranchi du soleil,
Ressuscitoit les fleurs d'une haleine seconde.

L'Aurore deployoit l'or de sa tresse blonde,
Eet semoit de rubis le chemin du soleil ;
Enfin ce Dieu venoit au plus grand appareil
Qu'il soit jamais venu pour éclairer le monde :

Quand la jeune Philis au visage riant,
Sortant de son palais plus clair que l'orient,
Fit voir une lumiere et plus vive et plus belle.

Sacre Flambeau du jour, n'en soiez point jaloux,
Vous parutes alors aussi peu devant elle,
Que les feux de la nuit avoient fait devant vous.

Malleville.

There is in Chaucer a thought expressed in a single line, which sets a young beauty in a more advantageous light than the whole of this much laboured poem :

Up rose the sun, and up rose Emelie.

HYPERBOREAN, in the ancient geography. The ancients denominated those people and places *Hyperborean* which were to the northward of the Scythians. They had but very little acquaintance with these Hyperborean regions; and all they tell us of them is very precarious, much of it false. Diodorus Siculus says, the Hyperboreans were thus called by reason they dwelt beyond the wind Boreas; *υπερ* signifying "above, or beyond," and *βορρας*, *Boreas*, the "north wind." This etymology is very natural and plausible; notwithstanding all that Rudbeck has said against it, who would have the word to be Gothic, and to signify *mobility*. Herodotus doubts whether or no there were any such nations as the Hyperborean. Strabo, who professes that he believes there are, does not take *hyperborean* to signify *beyond Boreas* or the north, as Herodotus understood it: the preposition *υπερ*, in this case, he supposes only to help to form a superlative; so that *hyperborean*, on his principle, means no more than *most northern*: by which it appears the ancients scarce knew themselves what the name meant.—Most of our modern geographers, as Hoffman, Cellarius, &c. have placed the Hyperboreans in the northern parts of the European continent, among the Siberians and Samoieds: according to them, the Hyperboreans of the ancients were those in general who lived farthest to the north. The Hyperboreans of our days are those Russians who inhabit between the Volga and the White sea. According to Clavier, the name *Celtes* was synonymous with that of Hyperboreans.

HYPERCATALECTIC, in the Greek and Latin poetry, is applied to a verse that has one or two syllables too much, or beyond the regular and just measure; as,

Musa sorores sunt Minerva :

Also,

Musa sorores Palladis lugent.

HYPERCRITIC, an over-rigid censor or critic: one who will let nothing pass, but animadvert severely on the slightest fault. See **CRITICISM**. The word is compounded of *υπερ* *super*, "over, above, be-

yond;" and *κρινω*, of *κρισις*, *judex*, of *κριω*, *judico*, Hyperdulia "I judge."

HYPERDULIA, in the Romish theology, is the worship rendered to the holy virgin. The word is Greek, *υπερδουλια*, composed of *υπερ*, *above*, and *δουλια*, *worship, service*. The worship offered to saints is called *dulia*; and that to the mother of God, *hyperdulia*, as being superior to the former.

HYPERIA (anc. geog.) the seat of the Phæacians near the Cyclops, (Homer): some commentators take it to be Camarina in Sicily; but, according to others, is supposed to be an adjoining island, which they take to be Melita, lying in sight of Sicily. And this seems to be confirmed by Apollonius Rhodius. Whence the Phæacians afterwards removed to Corcyra, called *Seberia*, *Phæacia*, and *Macris*; having been expelled by the Phœnicians, who settled in Melita for commerce, and for commodious harbours, before the war of Troy. (Diodorus Siculus.)

HYPERICUM, ST JOHN'S WORT: A genus of the polyandria order, belonging to the polyadelphia class of plants; and in the natural method ranking under the 20th order, *Rotacea*. The calyx is quinquepartite; the petals five; the filaments many, and coalesced at the base into five pencils; the seed-vessel is a pencil.

Species. Of this genus there are 29 species, most of them hardy deciduous shrubs, and under-shrubby plants, adorned with oblong and oval simple foliage, and pentapetalous yellow flowers in clusters. The most remarkable are, 1. The *hircinum*, or stinking St John's-wort. This rises three or four feet high, with several shrubby two-edged stalks from the root, branching by pairs opposite at every joint; oblong, oval, close-fitting opposite leaves; and at the ends of all the young shoots, clusters of yellow flowers. Of this there are three varieties; one with strong stalks, six or eight feet high, broad leaves, and large flowers; the other with strong stalks, broad leaves, and without any disagreeable odour; the third hath variegated leaves. All these varieties are shrubby; and flower in June and July in such numerous clusters, that the shrubs appear covered with them; and produce abundance of seed in autumn. 2. The *sarriacum* hath shrubby stalks, dividing and branching six or seven feet high; oblong, close-fitting leaves by pairs; and, at the ends of the branches, clusters of yellow flowers appearing in June and July. 3. The *ascyron*, or dwarf American St John's-wort, hath spreading roots, sending up numerous, slender, square stalks, a foot long; oval, spear-shaped, close-fitting, smooth leaves by pairs opposite; and, at the end of the stalks, large yellow flowers. 4. The *androgamum*, commonly called *tussock*, or *park-leaves*, hath an upright under-shrubby stalk, two feet high, branching by pairs opposite; and at the ends of the stalks, clusters of small yellow flowers appearing in July and August, and succeeded by roundish berry-like black capsules. This grows naturally in many parts of Britain. 5. The *balearicum*, or wart-leaved St John's-wort, is a native of Majorca; and hath a shrubby stalk, branching two feet high, with reddish scarified branches, small oval leaves warted underneath, and large yellow flowers appearing great part of the year. 6. The *monogynum*, or one-styled *China hypericum*, hath a shrubby purplish stalk, about two feet high; oblong, smooth, stiff, close-fitting;

Hyperdulia
Hypericum.

Hypericum fitting leaves, of a shining green above, and white underneath; clusters of small yellow flowers, with coloured cups, and only one style, flowering the greatest part of the year.

||
Hypnoti-
cus

Culture. The four first species are hardy, and will grow in any soil or situation; the three last must be potted, in order to have shelter in the green-house in winter. The two first species propagate very fast by suckers, which are every year sent up plentifully from the root; and in autumn or spring may be readily slipped off from the old plants with roots to each, or the whole plant may be taken up and divided into as many parts as there are suckers and slips with roots, planting the strongest where they are to remain, and the weakest in nursery-rows, where they are to remain a year in order to acquire strength. They may also be propagated by seeds sown in autumn, in a bed of common earth, in drills an inch deep. The other two hardy sorts are also propagated by slipping the roots in autumn, or early in the spring; and may likewise be raised in great plenty from seeds. The three other species are propagated by layers and cuttings, planted in pots, and plunged in a hot bed.

Properties. The tutsan hath long held a place in the medicinal catalogues; but its uses are very much undetermined. The leaves given in substance are said to destroy worms. By distillation they yield an essential oil. The flowers tinge spirits and oils of a fine purple colour. Cows, goats, and sheep, eat the plant; horses and swine refuse it. The dried plant boiled in water with alum, dyes yarn of a yellow colour; and the Swedes give a fine purple tinge to their spirits with the flowers.

HYPERIDES, an orator of Greece, was the disciple of Plato and Isocrates, and governed the republic of Athens. He defended with great zeal and courage the liberties of Greece; but was put to death by Antipater's order, 322 B. C. He composed many orations, of which only one now remains. He was one of the ten celebrated Greek orators.

HYPERMNESTRA, in fabulous history, one of the 50 daughters of Danaus king of Argos. She alone refused to obey the cruel order Danaus had given to all his daughters, to murder their husbands the first night of their marriage; and therefore saved the life of Lynceus, after she had made him promise not to violate her virginity. Danaus, enraged at her disobedience, confined her closely in prison, whence Lynceus delivered her some time after.

HYPERSARCOSIS, in medicine and surgery, an excess of flesh, or rather a fleshy excrescence, such as those generally rising upon the lips of wounds, &c.

HYPHEN, an accent or character in grammar, implying that two words are to be joined, or connected into one compound word, and marked thus: as *pre-established, five-leaved, &c.* Hyphens also serve to connect the syllables of such words as are divided by the end of the line.

HYPNOTIC, in the materia medica, such medicines as any way produce sleep, whether called *narcotics, hypnotics, opiates, or soporifics.*

HYPNOTICUS SERPENS, the *Sleep-snake*, in zoology, the name of an East-Indian species of serpent, called by the Ceylonese *nintipolong*, a word importing the same sense. It is of a deep blackish brown, varie-

gated with spots of white, and is a very fatal kind in its poison; its bite always bringing on a sleep which ends in death.

Hypnum
||
Hypocha-
ris

HYPNUM, FEATHER-MOSS, in botany: A genus of the natural order of musci, belonging to the cryptogamia class of plants. The antheræ is operculated, or covered with a lid; the calyptra smooth; the filament lateral, and rising out of a perichæcium, or tuft of leaflets different from the other leaves of the plant. There are 46 species, all of them natives of Great Britain; none of them, however, have any remarkable property, except the proliferum and parietinum. The first is of a very singular structure, one shoot growing out from the centre of another; the veil is yellow and shining; the lid with a kind of long bill; the leaves not shining; sometimes of a yellowish, and sometimes of a deep green. This moss covers the surface of the earth in the thickest shades, through which the sun never shines, and where no other plant can grow. The second hath shoots nearly flat and winged, undivided for a considerable length, and the leaves shining; but the old shoots do not branch into new ones as in the preceding species. It grows in woods and shady places; and, as well as the former, is used for filling up the chinks in wooden houses.

HYPO, a Greek particle, retained in the composition of divers words borrowed from that language; literally denoting *under, beneath*.—In which sense it stands opposed to *super* supra, "above."

HYPOBOLE, or SUBJECTION, (from *υπο*, and *βαλλω*, *I cast*), in rhetoric, a figure; so called, when several things are mentioned, that seem to make for the contrary side, and each of them refuted in order. This figure, when complete, consists of three parts; a proposition, an enumeration of particulars with their answer, and a conclusion. Thus Cicero, upon his return from banishment, vindicates his conduct in withdrawing so quietly, and not opposing the faction that ejected him. See ORATORY, n° 81.

HYPOCATHARSIS (compounded of *υπο* under, and *καθαίρω* *I purge*), in medicine, a too faint or feeble purgation.

HYPOCAUSTUM, among the Greeks and Romans, a subterraneous place, where was a furnace to heat the baths. The word is Greek, formed of the preposition *υπο* under; and the verb *καίω*, to burn.—Another sort of hypocaustum was a kind of kiln to heat their winter parlours. The remains of a Roman hypocaustum, or sweating-room, were discovered under ground at Lincoln in 1739. We have an account of these remains in the Philosophical Transactions, n° 461. § 29.—Among the moderns, the hypocaustum is that place where the fire is kept which warms a stove or hot-house.

HYPOCHÆRIS, HAWK'S-EYE, in botany: A genus of the polygamia æqualis order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The receptacle is paleaceous; the calyx a little imbricated; the pappus glumy. There are four species; none of which have any remarkable property, except the maculata, or spotted hawk's-eye. It is a native of Britain, and grows on high grounds. The leaves are oblong, egg-shaped, and toothed; the stem almost naked, generally with a single branch; the blossoms yellow, opening at fix

HYPONCHONDRIA, fix in the morning, and closing at four in the afternoon. The leaves are boiled and eaten like cabbage. Horfes are fond of this plant when green, but not when dry. Cows, goats, and swine eat it; sheep are not fond of it.

HYPOCHONDRIA, in anatomy, a space on each side the epigastric region, or upper part of the abdomen. See **ANATOMY**, n° 88.

HYPOCHONDRIAC PASSION, a disease in men, similar to the hysteric affection in women. See (the *Index* subjoined to) **MEDICINE**.

HYPOCISTIS, in the materia medica, an inspissated juice obtained from the sessile asarum, much resembling the true Egyptian acacia. They gather the fruit while unripe, and express the juice, which they reevaporate over a very gentle fire, to the consistence of an extract, and then form into cakes, and expose them to the sun to dry. It is an astringent of considerable power; is good against diarrhoeas and hæmorrhages of all kinds; and may be used in redellent gargarisms in the manner of the true acacia; but it is very rarely met with genuine in our shops, the German acacia being usually sold under its name.

HYPOCRISY, *υποκρισις*, in ethics, denotes dissimulation with regard to the moral or religious character. In other words, it signifies one who feigns to be what he is not; and is generally applied to those who assume the appearances of virtue or religion, without having any thing in reality of either.

HYPOGÆUM, *υπογειον*, formed of *υπο* under, and *γαια* earth, in the ancient architecture, is a name common to all the parts of a building that are under ground; as the cellar, butteries, and the like places. The term *hypogæum* was used by the Greeks and Romans for subterraneous tombs in which they buried their dead.

HYPOGEUM, *Τροχαιον*, in astrology, is a name given to the celestial houses which are below the horizon: and especially the *imū calī*, or bottom of heaven.

HYPOGASTRIC, an appellation given to the internal branch of the iliac artery.

HYPOGASTRIUM, in anatomy, the middle part of the lower region of the belly. See **ANATOMY**, n° 88.

HYPOGLOSSI, **EXTERNI**, or **MAJORES**, in anatomy, the ninth pair of nerves, called also *linguales* & *gustatorii*. See **ANATOMY**, p. 760. col. 1.

HYPOGLOTTIS, or **HYPOGLOSSIS**, (composed of *υπο* under, and *γλωττις* tongue), in anatomy, is a name given to two glands of the tongue. There are four large glands of the tongue; two of them called *hypoglossides*, situated under it, near the *venæ ranulares*; one on each side of the tongue. They serve to filtrate a kind of serous matter of the nature of saliva, which they discharge into the mouth by little ducts near the gums.

HYPOGLOTTIS, or *Hypoglossis*, in medicine, denotes an inflammation or ulceration under the tongue; called also *ranula*.

HYPOPYON, in medicine, a collection of purulent matter under the corner of the eye.

HYPOSCENIUM, in antiquity, a partition under the pulpit or logeum of the Greek theatre, appointed for the music.

HYPOSTASIS, a Greek term, literally signifying *substance*, or *subsistence*; used in theology for *person*.—The word is Greek, *υποστασις*; compounded of *υπο* sub, “under;” and *ιστημι*, *βο, εξιστο*; “I stand, I exist;” q. d. *subsistentia*. Thus we hold, that there is but one nature or essence in God, but three *hypostases* or persons.

The term *hypostasis* is of a very ancient standing in the church. St Cyril repeats it several times, as also the phrase *union according to hypostasis*. The first time it occurs is in a letter from that father to Nestorius, where he uses it instead of *προσωπον*, the word we commonly render *person*, which did not seem expressive enough. “The philosophers (says St Cyril) have allowed three *hypostases*: They have extended the Divinity to three *hypostases*: They have even sometimes used the word *trinity*: And nothing was wanting but to have admitted the consubstantiality of the three *hypostases*, to show the unity of the divine nature, exclusive of all triplicity in respect of distinction of nature, and not to hold it necessary to conceive any respective inferiority of *hypostases*.”

This term occasioned great dissensions in the ancient church; first among the Greeks, and afterwards also among the Latins. In the council of Nice, *hypostasis* was defined to denote the same with *essence* or *substance*: so that it was heresy to say that Jesus Christ was of a different *hypostasis* from the Father; but custom altered its meaning. In the necessity they were under of expressing themselves strongly against the Sabellians, the Greeks made choice of the word *hypostasis*, and the Latins of *persona*; which change proved the occasion of endless disagreement. The phrase *τρεῖς υποστασεις*, used by the Greeks, scandalized the Latins, whose usual way of rendering *υποστασις* in their language was by *substantia*. The barrenness of the Latin tongue in theological phrases, allowed them but one word for the two Greek ones, *υπο* and *υποστασις*; and thus disabled them from distinguishing *essence* from *hypostasis*. For which reason they chose rather to use the term *tres persone*, and *tres hypostases*.—An end was put to logomachias, in a synod held at Alexandria about the year 362, at which St Athanasius assisted; from which time the Latins made no great scruple of saying *tres hypostases*, nor the Greeks of *three persons*.

HYPOTHECA, in the civil law, an obligation, whereby the effects of a debtor are made over to his creditor, to secure his debt. The word comes from the Greek *υποθηκη*, a thing subject to some obligation; of the verb *υποτιθημαι*, *supponor*, “I am subjected;” of *υπο* under, and *τιθημι* *pono*, “I put.”

As the hypotheca is an engagement procured on purpose for the security of the creditor, various means have been made use of to secure to him the benefit of the convention. The use of the pawn or pledge is the most ancient, which is almost the same thing with the hypotheca; all the difference consisting in this, that the pledge is put into the creditor's hands; whereas, in a simple hypotheca, the thing remained in the possession of the debtor. It was found more easy and commodious to engage an estate by a civil covenant than by an actual delivery: accordingly the expedient was first practised among the Greeks; and from them the Romans borrowed both the name and the thing: only the Greeks, the better to prevent frauds, used to fix some visible,

Hypostasis
Hypotheca

Hypothese, *Hypothesis*, visible mark on the thing, that the public might know it was hypothecate or mortgaged by the proprietor; but the Romans, looking on such advertisements as injurious to the debtor, forbade the use of them.

The Roman lawyers distinguished four kinds of hypothecas: the conventional, which was with the will and consent of both parties; the legal, which was appointed by law, and for that reason called *tacit*; the prætor's pledge, when by the flight or non-appearing of the debtor, the creditor was put in possession of his effects; and the judiciary, when the creditor was put in possession by virtue of a sentence of the court.

The conventional hypotheca is subdivided into general and special. The hypotheca is general, when all the debtor's effects, both present and future, are engaged to the creditor. It is special, when limited to one or more particular things.

For the tacit hypotheca, the civilians reckon no less than twenty-six different species thereof.

HYPOTHENUSE, in geometry, the longest side of a right-angled triangle, or that which subtends the right angle.

HYPOTHESIS, (formed of *υπο* "under," and *θεσις* *positio* of *τίθαι* *pono*, "I put"), is a proposition or principle which we suppose, or take for granted, in order to draw conclusions for the proof of a point in question.

In disputation, they frequently make false hypotheses, in order to draw their antagonists into absurdities; and even in geometry truths are often deducible from such false hypotheses.

Every conditional or hypothetical proposition may be distinguished into hypothesis and thesis: the first rehearses the conditions under which any thing is affirmed or denied; and the latter is the thing itself affirmed or denied. Thus, in the proposition, a triangle is half of a parallelogram, if the bases and altitudes of the two be equal; the latter part is the hypothesis, "if the bases," &c. and the former the thesis, "a triangle is half a parallelogram."

In strict logic, we are never to pass from the hypothesis to the thesis; that is, the principle supposed must be proved to be true, before we require the consequence to be allowed.

HYPOTHESIS, in physics, &c. denotes a kind of system laid down from our own imagination, whereby to account for some phenomenon or appearance of nature. Thus we have hypothesis to account for the tides, for gravity, for magnetism, for the deluge, &c.

The real and scientific causes of natural things generally lie very deep: observation and experiment, the proper means of arriving at them, are in most cases extremely slow; and the human mind is very impatient; hence we are frequently driven to feign or invent something that may seem like the cause, and which is calculated to answer the several phenomena, so that it may possibly be the true cause.

Philosophers are divided as to the use of such fictions or hypotheses, which are much less current now than they were formerly. The latest and best writers are for excluding hypotheses, and standing wholly on observation and experiment. Whatever is not deduced from phenomena, says Sir Isaac Newton, is an hypothesis; and hypotheses, whether metaphysical, or physical or mechanical, or of occult qualities, have no place in experimental philosophy.

N° 162.

The Cartesians take upon them to suppose what affections in the primary particles of matter they please; just what figures, what magnitudes, what motions, and what situations, they find for their purpose. They also feign certain unseen, unknown fluids, and endue them with the most arbitrary properties; give them a subtilty which enables them to pervade the pores of all bodies, and make them agitated with the most unaccountable motions. But is not this to set aside the real constitution of things, and to substitute dreams in their place? Truth is scarce attainable even by the surest observations; and will fanciful conjectures ever come at it? They who found their speculations on hypotheses, even though they argue from them regularly, according to the strictest laws of mechanics, may be said to compose an elegant and artful fable; but it is still only a fable.

HYPOTHESIS is more particularly applied in astronomy to the several systems of the heavens; or the different ways in which different astronomers have supposed the heavenly bodies to be ranged, moved, &c.

The principal hypotheses are the Ptolemaic, Copernican, and Tychonic. The Copernican is now become so current, and is so well warranted by observation, that the retainers thereto hold it injurious to call it an hypothesis. See **ASTRONOMY**.

HYPOTIPOSIS. See **ORATORY**, n° 91.

HYPOXIS in botany: A genus of the monogynia order, belonging to the hexandria class of plants; and in the natural method ranking under the 10th order, *Coronaria*. The corolla is divided into six parts, and persisting, superior; the capsule narrowing at the base; the calyx a bivalved glume.

HYPsISTARII, (formed from *υψιστος* "highest"), a sect of heretics in the fourth century; thus called from the profession they made of worshipping the most high God.

The doctrine of the Hypsistarians was an assemblage of Paganism, Judaism, and Christianity. They adored the most high God with the Christians; but they also revered fire and lamps with the heathens; and observed the sabbath, and the distinction of clean and unclean things with the Jews.

The Hypsistarii bore a near resemblance to the Eucrites, or Maffalians.

HYRCANIA (anc. geog.), a country of the farther Asia, lying to the south-east of the *Mart Hyrcanum* or *Caspium*; with Media on the west, Parthia on the south, and Margiana on the west. Famous for its tigers (Virgil); for its vines, figs, and olives, (Strabo).

HYRCANIA (anc. geog.): a town of Lydia, in the *campus Hyrcanus*, near Thyatira; so called from colonists brought from Hyrcania, a country lying to the south of the Caspian sea. The people called *Hyrcani Macedones*, because a mixed people (Pliny).—Another Hyrcania, the metropolis of the country called *Hyrcania*. Thought to be the Tape of Strabo, the Syriax of Polybius, the Zeudracarta of Arrian, and the Asiac of Isidorus Characenus.—A third, a strong place of Judea, built by Hyrcanus.

HYSSOP. See **HYSSOPUS**.

Hedge-Hyssop. See **GRATIOLA**.

HYSSOPUS, **HYSSOP**: A genus of the gymnospermia order, belonging to the didynamia class of plants. There are three species; but only one of them,

etis.

Hystrix.

Plate CCXLVIII.

H. coendou.

H. cristata.



Jatropha Manihot.



Exhibetur in Nat. R. comp. p. 101.

Hyssop viz. the *officinalis*, or common hyssop, is cultivated for use. This hath under-shrubby, low, bushy stalks, growing a foot and an half high; small, spear-shaped, close-sitting, opposite leaves, with several smaller ones rising from the same joint; and all the stalks and branches terminated by erect whorled spikes of flowers, of different colours in the varieties. They are very hardy plants; and may be propagated either by slips or cuttings, or by seeds. The leaves have an aromatic smell, and a warm pungent taste. Besides the general virtues of aromatics, they are particularly recommended in humoral asthma, coughs, and other disorders of the breast and lungs; and are said notably to promote expectoration.

Hyssop was generally made use of in purifications amongst the Jews by way of a sprinkler. Sometimes they added a little wool to it of a scarlet colour; for example, they dipped a bunch of hyssop, some branches of cedar and red wool, in water mingled with the blood of a bird, in the purification of lepers. Hyssop, it is probable, grew to a considerable height in Judæa, since the gospel informs us that the soldiers filled a sponge with vinegar, put it upon a reed (or long stem) of hyssop, and presented it to our Saviour upon the cross.

HYSTERIC AFFECTION, or *Passion*, (formed of *υστειρα* "womb"); a disease in women, called also *suffocation of the womb*, and vulgarly *fits of the mother*. It is a spasmodico-convulsive affection of the nervous system, proceeding from the womb; for the symptoms and cure of which, see **MEDICINE**.

HYSTERON PROTERON, in grammar and rhetoric, a species of the hyperbaton, wherein the proper order of construction is so inverted, that the part of any sentence which should naturally come first is placed last: as in this of Terence, *Valet et vivit*, for *vivit et valet*; and in the following of Virgil, *Moriamur, & in media arma ruamus*, for *In media arma ruamus, & moriamur*.

HYSTRIX, in zoology, a genus of quadrupeds belonging to the order of glires, the characters of which are these: They have two fore-teeth, obliquely divided both in the upper and under jaw, besides eight grinders; and the body is covered with quills or prickles. There are four species, viz.

1. The *cristata*, or crested porcupine, has four toes on the fore-feet, five toes on the hind-feet, a crested head, a short tail, and the upper lip is divided like that of a hare. The length of the body is about two feet, and the height about two feet and an half. The porcupine is covered with prickles, some of them nine or ten inches long, and about $\frac{1}{4}$ th of an inch thick. Like the hedge-hog, he rolls himself up in a globular form, in which position he is proof against the attacks of the most rapacious animals. The prickles are exceedingly sharp, and each of them has five large black and as many white rings, which succeed one another alternately from the root to the point. These quills the animal can erect or let down at pleasure; when irritated, he beats the ground with his hind-feet, erects his quills, shakes his tail, and makes a considerable rattling noise with his quills.—Most authors have asserted that the porcupine, when irritated, darts his quills to a considerable distance against the enemy, and that he will kill very large animals by this means. But

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M. Buffon and some other late naturalists assure us, that the animal possesses no such power. M. Buffon frequently irritated the porcupine, but never saw any thing like this darting of his quills. He says indeed, that when the creature was much agitated with passion, some of the quills which adhered but slightly to the skin would fall off, particularly from the tail; and this circumstance, he imagines, has given rise to the mistake. The porcupine, though originally a native of Africa and the Indies, can live and multiply in the more temperate climates of Spain and Italy. Pliny, and every other natural historian since the days of Aristotle, tells us, that the porcupine, like the bear, conceals itself during the winter, and that it brings forth its young in 80 days. But these circumstances remain to this day uncertain. It is remarkable, that although this animal be very common in Italy, no person has ever given us a tolerable history of it. We only know in general, that the porcupine, in a domestic state, is not a fierce or ill-natured animal; that with his foreteeth, which are strong and sharp, he can cut through a strong board; that he eats bread, fruits, roots, &c.; that he does considerable damage when he gets into a garden; that he grows fat, like most animals, about the end of summer; and that his flesh is not bad food.

2. The *prehensilis*, or *Brazilian porcupine*, has four toes on the fore feet, five on the hind-feet, and a long tail. It is considerably less than the former species; being only 17 inches long from the point of the muzzle to the origin of the tail, which is nine inches long; the legs and feet are covered with long brownish hair; the rest of the body is covered with quills interspersed with long hairs; the quills are about five inches long, and about $\frac{1}{4}$ th of an inch in diameter. He feeds upon birds and small animals. He sleeps in the day like the hedge-hog, and searches for his food in the night. He climbs trees, and supports himself by twisting his tail round the branches. He is generally found in the high grounds of America from Brazil to Louisiana, and the southern parts of Canada. His flesh is esteemed very good eating.

A variety of this species is the *Hoitzlacuatzin*, or Mexican porcupine, (*le Coendou* de Buffon). It is of a dusky colour, with very long bristles intermixed with the down: the spines three inches long, slender, and varied with white and yellow; scarcely apparent except on the tail, which is, according to Hernandez, thicker and shorter than that of the preceding species. He adds, that the tail from the middle to the end is free from spines; and that it grows to the bulk of a middle-sized dog. M. de Buffon says, its length is 16 or 17 inches from the nose to the tail; the tail 9 French measure, but taken from a mutilated skin. It inhabits the mountains of Mexico, where it lives on the summer fruits, and may be easily made tame. The Indians pulverise the quills, and say they are very efficacious in gravelly cases; and applied whole to the forehead, will relieve the most violent headache. They adhere till filled with blood, and then drop off.

3. The *dorsata*, or Canada porcupine (*l'Ursou* de Buffon), has four toes on the fore-feet, five on the hind-feet; and has quills only on the back, which are short, and almost hid among the long hair. He is about two feet long. This species inhabits North America

G

America

Hystrix. America as high as Hudson's Bay; and makes its nest under the roots of great trees. It will also climb among the boughs, which the Indians cut down when one is in them, and kill the animal by striking it over the nose. They are very plentiful near Hudson's Bay; and many of the trading Indians depend on them for food, esteeming them both wholesome and pleasant. These animals feed on wild fruits and bark of trees, especially juniper: eat snow in winter, and drink water in summer; but avoid going into it. When they cannot avoid their pursuer, they will sidle towards him, in order to touch him with the quills, which seem but

weak weapons of offence; for on stroaking the hair, they will come out of the skin, sticking to the hand. The Indians stick them in their noses and ears, to make holes for the placing their ear-rings and other finery: they also trim the edges of their deer-skin habits with fringes made of the quills, or cover with them their bark-boxes.

4. The *macroura*, has five toes both on the hind and fore-feet; his tail is very long, and the prickles are elevated. He inhabits the isles of the Indian Archipelago, and lives in the forests.

I.

I, or *i*, the ninth letter and third vowel of the alphabet, is pronounced by throwing the breath suddenly against the palate, as it comes out of the larynx, with a small hollowing of the tongue, and nearly the same opening of the lips and talk as in pronouncing *a* or *e*. Its sound varies: in some words it is long as *high*, *mind*, &c.; in others short, as *bid*, *bid*, *fin*, &c.; in others, again, it is pronounced like *y*, as in *collier*, *onion*, &c.; and in a few, it sounds like *ee*, as in *machine*, *magazine*, &c. No English word ends in *i*, *e* being either added to it, or else the *i* turned into *y*.

But besides the vowel, there is the *jod* consonant; which, because of its different pronunciation, has likewise a different form, thus *J*, *j*. In English, it has the soft sound of *g*; nor is used, but when *g* soft is required before vowels, where *g* is usually hard: thus we say, *jack*, *jet*, *join*, &c. instead of *gack*, *get*, *goin*, &c. which would be contrary to the genius of the English language.

I, used as a numeral, signifies *one*, and stands for so many unites as it is repeated times: thus **I**, one; **II**, two; **III**, three, &c.; and when put before a higher numeral, it subtracts itself, as **IV**, four; **IX**, nine, &c. But when set after it, so many are added to the higher numeral as there are **I**'s added: thus **VI** is 5+1, or six; **VII**, 5+2, or seven; **VIII**, 5+3, or eight. The ancient Romans likewise used **IO** for 500, **CIO** for 1000, **IOO** for 5000, **CCIOO** for 10,000, **IOOO** for 50,000, and **CCCIOOO** for 100,000. Farther than this, as Pliny observes, they did not go in their notation; but, when necessary, repeated the last number, as **CCCIOOO**, **CCCIOOO**, for 200,000; **CCCIOOO**, **CCCIOOO**, **CCCIOOO**, for 300,000; and so on.

The ancients sometimes changed *i* into *u*; as *decimus* for *decimus*; *maximus* for *maximus*, &c.

According to Plato, the vowel *i* is proper to express delicate, but humble things, as in this verse in Virgil which abounds in *i*'s, and is generally admired:

Accipiunt inimicum imbrem, rimisque fatiscunt.

I, used as an abbreviature, is often substituted for the whole word *Jesus*, of which it is the first letter.

JABBOK, a brook on the other side of the Jordan, the spring whereof is in the mountains of Gilead. It falls into Jordan pretty near the sea of Tiberias, to the south of this sea. Near this brook the patriarch Jacob wrestled with the angel (Gen. xxxii. 22). The Jabbok separated the land of the Ammonites from the Gaulanitis, and the territories of Og king of Bashan.

JABESH, or **JABESH-GILEAD**, was the name of a city, in the half tribe of Manasseh, beyond Jordan. The scripture calls it generally Jabesh-Gilead, because it lay in Gilead, at the foot of the mountains which go by this name. Eusebius places it six miles from Pella, towards Gerasa; and consequently it must be eastward of the sea of Tiberias.

JABIRU. See **MYCTERIA**.

JABLONSKI (Daniel Ernest), a learned Polish Protestant divine, born at Danzick in 1660. He became successively minister of Magdeburg, Lissa, Königsberg, and Berlin; and was at length ecclesiastical counsellor, and president of the academy of sciences at the latter. He took great pains to effect an union between the Lutherans and Calvinists; and wrote some works which are in good esteem, particularly Meditations on the origin of the Scriptures, &c. He died in 1741.

JABLONSKI (Theodore), counsellor of the court of Prussia, and secretary of the royal academy of sciences at Berlin, was also a man of distinguished merit. He loved the sciences, and did them honour, without that ambition which is generally seen in men of learning: it was owing to this modesty that the greatest part of his works were published without his name. He published, in 1711, a French and German Dictionary; a Course of Morality, in 1713; a Dictionary of Arts and Sciences, in 1721; and translated *Tacitus de moribus Germanorum* into High Dutch, in 1724.

JABNE

Jabne
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Jackson.

JABNE (anc. geog.), a town of Palestine, near Joppa; called *Jamnia* or *Jamial*, by the Greeks and Romans. In Joshua xv. it seems to be called *Jabneel*; but in 2 Chron. xxvi. *Jabne*. It was taken from the Philistines by Uzziah, who demolished its fortifications. Its port, called *Jamniarum portus*, lay between Joppa and Azotus.

JACAMAR, in ornithology. See **ALCEDO**.

JACCA, an ancient town of Spain, in the kingdom of Arragon, with a bishop's see, and a fort; seated on a river of the same name; among the mountains of Jacca, which are part of the Pyrenees. W. Long. o. 19. N. Lat. 44. 22.

JACK, in mechanics, a well-known instrument of common use for raising great weights of any kind.

The common kitchen-jack is a compound engine, where the weight is the power applied to overcome the friction of the parts and the weight with which the spit is charged; and a steady and uniform motion is obtained by means of the fly.

JACK, in the sea-language, a sort of flag or colours, displayed from a mast erected on the outer end of a ship's bowsprit. In the British navy the jack is nothing more than a small union flag, composed of the intersection of the red and white crosses; but in merchant-ships this union is bordered with a red field. See the article **UNION**.

JACK is used also for a horse or wooden frame to saw timber upon; for an instrument to pull off a pair of boots; for a great leathern pitcher to carry drink in; for a small bowl that serves as a mark at the exercise of bowling; and for a young pike.

JACK-Flag, in a ship, that hoisted up at the sprit-sail top-mast head.

JACK-Daw, the English name of a species of corvus. See **CORVUS**.

This bird is very mischievous to the farmer and gardener; and is of such a thievish disposition, that he will carry away much more than he can make use of. There is a method of destroying them by a kind of springs much used in England; and is so useful, that it ought to be made universal.—A stake of about five feet long is to be driven firmly into the ground, and made so fast that it cannot move, and so sharp in the point that the bird cannot settle upon it. Within a foot of the top there must be a hole bored through it, of three quarters of an inch diameter; through this hole is to be put a stick of about eight inches long; then a horse-hair spring or noose is to be made fast to a thin hazel-wand, and this brought up to the place where the short stick is placed, and carried with it through the hole, the remainder being left open under that stick. The other end of the hazel rod is to be put through a hole in the stake near the ground, and fastened there. The stake is to be planted among the jack-daw's food, and he will naturally be led to settle on it; but finding the point too sharp, he will descend to the little cross stick. This will sink with his weight, and the spring will receive his leg, and hold him fast.

JACKALL, in zoology. See **CANIS**.

JACKSON (Thomas), an eminent English divine, was born at Witton in the bishopric of Durham in 1579, of a good family. He commenced doctor of

divinity at Oxford in 1622; and at last was made chaplain in ordinary, prebendary of Winchester, and dean of Peterborough. He was a very great scholar; and died in 1640. His performance upon the Creed is a learned and valuable piece; which, with his other works, was published in 1673.

JACOB, the son of Isaac and Rebekah, was born in the year of the world 2168, before Jesus Christ 1836. The history of this patriarch is given at large in the book of Genesis. He died in Egypt in the 147th year of his age. Joseph directed that the body should be embalmed, after the manner of the Egyptians; and there was a general mourning for him throughout Egypt for seventy days. After this, Joseph and his brethren, accompanied with the principal men of Egypt, carried him, with the king of Egypt's permission, to the burying-place of his fathers near Hebron, where his wife Leah had been interred. When they were come into the land of Canaan, they mourned for him again for seven days; upon which occasion the place where they staid was called *Abelmisraim*, or the mourning of the Egyptians.

JACOB (Ben Hajim), a rabbi famous for the collection of the *Maforah* in 1525; together with the text of the bible, the Chaldaic paraphrase, and Rabbinical commentaries.

JACOB (Ben Naphthali), a famous rabbi of the 5th century: he was one of the principal massorets, and bred at the school of Tiberias in Palestine with Ben Aser, another principal massoret. The invention of points in Hebrew to serve for vowels, and of accents to facilitate the reading of that language, are ascribed to these two rabbis; and said to be done in an assembly of the Jews held at Tiberias, A. D. 476.

JACOB (Giles), an eminent law-writer, born at Romsey in the county of Southampton, in 1686. He was bred under a considerable attorney; and is principally known for his *Law Dictionary* in one vol. folio, which has been often printed; a new and improved edition having been lately given by counsellors Ruffhead and Morgan. Mr Jacob also wrote two dramatic pieces; and a *Poetical Register*, containing the lives and characters of English dramatic poets. The time of his death is not known.

JACOBÆUS (Oliger), a celebrated professor of physic and philosophy at Copenhagen, was born in 1651 at Arhusen in the peninsula of Jutland, where his father was bishop. Christian V. intrusted him with the management of his grand cabinet of curiosities; and Frederic IV. in 1698, made him counsellor of his court of justice. He wrote many medical works, and some excellent poems.

JACOBINE MONKS, the same with **DOMINICANS**.

JACOBITES, a term of reproach bestowed on the persons who, vindicating the doctrines of passive obedience and non-resistance with respect to the arbitrary proceedings of princes, disavow the revolution in 1688, and assert the supposed rights and adhere to the interests of the late abdicated King James and his family.

JACOBITES, in church history, a sect of Christians in Syria and Mesopotamia; so called, either from Jacob a Syrian who lived in the reign of the emperor

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Mauricius,

Jacob
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Jacobites.

Jacobus
Jaffateor.

Mauritius, or from one Jacob a monk who flourished in the year 550.

The Jacobites are of two sects, some following the rites of the Latin church, and others continuing separated from the church of Rome. There is also a division among the latter, who have two rival patriarchs. As to their belief, they hold but one nature in Jesus Christ; with respect to purgatory and prayers for the dead, they are of the same opinion with the Greeks and other eastern Christians: they consecrate unleavened bread at the eucharist, and are against confession, believing that it is not of divine institution.

JACOBUS, a gold coin, worth 25 shillings; so called from King James I. of England, in whose reign it was struck. See COIN.

We usually distinguish two kinds of *Jacobus*, the *old* and the *new*; the former valued at 25 shillings, weighing six pennyweight ten grains; the latter, called also *Carolus*, valued at 23 shillings, in weight five pennyweight twenty grains.

JACQUINIA, in botany: A genus of the monogynia order, belonging to the hexandria class of plants; and in the natural method ranking with those of which the order is doubtful. The corolla is decemfid; the stamina inserted into the receptacle; the berry monospermous.

JACULATOR, or SHOOTING-FISH. See CHÆTODON.

JADDESSES is the name of an inferior order of priests in Ceylon, who have the care of the chapels appropriated to the genii, who form a third order of gods among these idolaters. These priests are applied to by the people in a time of disease or calamity, who offer a cock on their behalf to appease the anger of the demons.

JADE-STONE, LAPIS NEPHRITICUS, or *Jaspachater*, a genus of siliceous earths. It gives fire with steel, and is semitransparent like flint. It does not harden in the fire, but melts in the focus of a burning glass into a transparent green glass with some bubbles. A kind brought from the river of the Amazons in America, and called *circumcision stone*, melts more easily in the focus into a brown opaque glass, far less hard than the stone itself. The jade-stone is unctuous to the touch; whence Mr Kirwan seems to suspect, that it contains a portion of argillaceous earth, or rather magnesia. The specific gravity is from 2.970 to 3.389; the texture granular, with a greasy look, but exceedingly hard, being superior in this respect even to quartz itself. It is infusible in the fire, nor can it be dissolved in acids without a particular management; though M. Saussure seems to have extracted iron from it. Sometimes it is met with of a whitish milky colour from China; but mostly of a deep or pale-green from America. The common lapis nephriticus is of a grey, yellowish, or olive colour. It has its name from a supposition of its being capable of giving ease in nephritic pains, by being applied externally to the loins. It may be distinguished from all other stones by its hardness, semipellucidity, and specific gravity.

JAFFA, the modern name of the city of JOPPA in Judea.

JAFFATEEN ISLANDS, the name of four islands in the Red Sea, visited by Mr Bruce in his late travels.

They are joined together by shoals or sunk rocks; are crooked or bent like half a bow; and are dangerous for ships in the night-time, because there seems to be a passage between them, to which while the pilots are paying attention, they neglect two small sunk rocks which lie almost in the middle of the entrance in deep water.

JAFNAPATAN, a sea port town, seated at the north-east end of the island of Ceylon in the East Indies. The Dutch took it from the Portuguese in 1658, and have continued in the possession of it since that time. They export from thence great quantities of tobacco, and some elephants, which are accounted the most docile of any in the whole world. E. Long. 80. 25. N. Lat. 9. 30.

JAGENDORF, a town and castle of Silesia, capital of a province of the same name, seated on the river Oppa. E. Long. 17. 47. N. Lat. 50. 4.

JAGGERNAUT, a black pyramidal stone worshipped by the Gentoos, who pretend that it fell from heaven or was miraculously presented on the place where their temple stands. There are many other idols of this figure in India; which, however, are all but accounted copies from the Jaggernaut. According to the best information Mr Grose could obtain, this stone is meant to represent the power presiding over universal generation, which they attribute to the general heat and influence of the sun acting in subordination to it. Domestic idols of the form of the Jaggernaut, and distinguished by the same name, are made by the Gentoos. These are niched up in a kind of triumphal car, decorated with gilding and tinsel; which for some days they keep in the best apartment in their house. During this time their devotion consists in exhibiting the most obscene postures, and acting all manner of lasciviousness, in sight as it were of the idol, and as the most acceptable mode of worship to that deity it represents; after which they carry it in its gilded car in procession to the Ganges, and throw in all together as an acknowledgment to that river of its congenial fertilization with that of the sun. Formerly this machine was decorated with jewels and other expensive ornaments; but the Indians are now become less extravagant, as they found that the Moors and Christians, watching the places where they threw in their idols, dived for them for the sake of the jewels with which they were adorned.

Our author conjectures, that this pyramidal form of the Gentoos idol was originally taken from that of flame, which always inclines to point upwards. From this Indian deity he supposes the shape of the Paphian Venus to have been derived, for which Tacitus could not account. This image had nothing of the human form in it, but rose orbicularly from a broad basis, and in the nature of a race goal tapering to a narrow convex a-top; which is exactly the figure of the idol in India, consecrated to such an office as that heathen deity was supposed to preside over, and to which, on the borders of the Ganges especially, the Gentoos virgins are brought to undergo a kind of superficial defecation before they are presented to their husbands.

JAGO (Richard), an ingenious poet, was vicar of Sutterfield in Warwickshire, and rector of Kimcote in Leicestershire. He was the intimate friend and correspondent of Mr Shenstone, contemporary with him at Oxford, and, it is believed, his schoolfellow; was of U-

Jafnapatan
Jago.

Jago.

niversity College; took the degree of M. A. July 9. 1739; was author of several poems in the 4th and 5th volumes of Doddsley's Poems; published a sermon, in 1755, on the Causes of Impenitence considered, preached May 4. 1755, at Harbury in Warwickshire, where he was vicar, on occasion of a conversation said to have passed between one of the inhabitants and an apparition in the church-yard there; wrote "Edge-hill," a poem, for which he obtained a large subscription in 1767; and was also author of "Labour and Genius," 1768, 4to; of "The Blackbirds," a beautiful elegy in the Adventurer; and of many other ingenious performances. He died May 28. 1781.

St JAGO, a large river of South America, which rises in the audience of Quito and Peru. It is navigable; and falls into the South Sea, after having watered a fertile country abounding in cotton-trees, and inhabited by wild Americans.

St JAGO, the largest, most populous and fertile of the Cape Verd islands, on the coast of Africa, and the residence of the Portuguese viceroy. It lies about 13 miles eastward from the island of Mayo, and abounds with high barren mountains; but the air, in the rainy season, is very unwholesome to strangers. Its produce is sugar, cotton, wine, and some excellent fruits. The animals are black cattle, horses, asses, deer, goats, hogs, civet-cats, and some very pretty green monkeys with black faces.

St JAGO, a handsome and considerable town of South America, the capital of Chili, with a good harbour, a bishop's see, and a royal audience. It is seated in a large and beautiful plain, abounding with all the necessaries of life, at the foot of the Cordilleras, on the river Mapocho, which runs across it from east to west. Here are several canals and a dyke, by means of which they water the gardens and cool the streets.—It is very much subject to earthquakes. W. Long. 69. 35. S. Lat. 33. 40.

St JAGO de Cuba, a town in North America, situated on the southern coast of the island of Cuba, in the bottom of a bay, with a good harbour, and on a river of the same name. W. Long. 76. 44. N. Lat. 20. 0.

JAGO de los Caballeros, a town of America, and one of the Principal of the island of Hispaniola. It is seated on the river Yague, in a fertile soil, but bad air. W. Long. 70. 5. N. Lat. 19. 40.

St JAGO del Entero, a town of South America, one of the most considerable of Tucuman, and the usual residence of the inquisitor of the province. It is seated on a large river, in a flat country, where there is game, tygers, guanacos, commonly called *camel-sheep*, &c.

JAGO de la Vega, otherwise called *Spanish-town*, is the capital of the island of Jamaica, in the West Indies; and stands in 18° 11' north latitude, and 76° 45' west longitude. It is about a mile in length, and little more than a quarter of a mile in breadth; and contains between 500 and 600 houses, with about 4000 inhabitants of all colours and denominations. This town is situated in a delightful plain, on the banks of the Rio Cobre, 13 miles from Kingston, and 10 from Port Royal. It is the residence of the commander in chief: and here the supreme court of judicature is held, four times in the year, viz. on the last Tuesdays of February,

May, August, and November, and sits three weeks.—St Jago de la Vega is the county-town of Middlesex, and belongs to the parish of St Catharine; in which parish there are 11 sugar-plantations, 108 pens, and other settlements, and about 10,000 slaves.

JAGUAR, or JAQUAR, a name given to the Brazilian once, a species of FELIS. See FELIS, spec. vi.

JAGUEER, in East India affairs, any pension from the Grand Mogul, or king of Delhi; generally such as are assigned for military services.

JAGUEERDAR, the holder or possessor of a jagueer. It comes from three Persian words, *Ja* "a place;" *guerisun* "to take;" and *dashun* "to hold;" quasi "a place-holder or pensioner." In the times of the Mogul empire, all the great officers of the court, called *omrahs*, were allowed jagueers, either in lands of which they collected the revenues, or assignments upon the revenues for specified sums, payable by the lord lieutenant of a province: which sums were for their maintenance, and the support of such troops as they were necessitated to bring into the field when demanded by the emperor, as the condition of their jagueers, which were always revokable at pleasure.

JAIL-FEVER, a very dangerous distemper of the contagious kind, arising from the putrescent disposition of the blood and juices. See (the *Index* subjoined to) MEDICINE.

JALAP, in botany and the materia medica, the root of a species of convolvulus or bind-weed. See CONVULVULUS.

This root is brought to us in thin transverse slices from Xalapa, a province of New Spain. Such pieces should be chosen as are most compact, hard, weighty, dark-coloured, and abound most with black circular striz. Slices of bryony root are said to be sometimes mixed with those of jalap: these may be easily distinguished by their whiter colour and less compact texture. This root has no smell, and very little taste upon the tongue; but when swallowed, it affects the throat with a sense of heat, and occasions a plentiful discharge of saliva. Jalap in substance, taken in a dose of about half a dram (less or more, according to the circumstances of the patient) in plethoric, or cold phlegmatic habits, proves an effectual, and in general a safe purgative, performing its office mildly, seldom occasioning nausea or gripes, which too frequently accompany the other strong cathartics. In hypochondriacal disorders, and hot bilious temperaments, it gripes violently if the jalap be good; but rarely takes due effect as a purge. An extract made by water purges almost universally, but weakly; and at the same time has a considerable effect by urine. The root remaining after this process gripes violently. The pure resin, prepared by spirit of wine, occasions most violent gripings, and other distressing symptoms, but scarce proves at all cathartic: triturated with sugar, or with almonds into the form of an emulsion, or dissolved in spirit, and mixed with syrups, it purges plentifully in a small dose, without occasioning much disorder: the part of the jalap remaining after the separation of the resin, yields to water an extract, which has no effect as a cathartic, but operates powerfully by urine. Its official preparations are an extract made with water and spirit, a simple tincture, and a compound powder.—Frederick Hoffman particularly

Jaquar

Jalap.

Jalemus
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Jamaica.

cularly cautions against giving this medicine to children; and assures us, that it will destroy appetite, weaken the body, and perhaps occasion even death. In this point, this celebrated practitioner was probably deceived: children, whose vessels are lax, and the food soft and lubricating, bear these kinds of medicines, as Geoffroy observes, better than adults; and accordingly inoculators make much use of the tincture mixed with simple syrup. The compound powder is employed in dropsy, as a hydragogue purge; and where stimulus is not contraindicated, jalap is considered as a safe cathartic.

JALEMUS, in antiquity, a kind of mournful song, used upon occasion of death, or any other affecting accident. Hence the Greek proverbs had their original, *ιαλεμὸν οἰκότερος, ὅτ ψυκότερος*, i. e. *more sad or colder than a jalemus*, *ἢς τὸς ἱαλεμὸς ὑλῆπτιος*, *worthy to be ranked among jalemus*.

JAMADAR: An officer of horse or foot, in Hindostan. Also the head or superintendant of the Peons in the Sewaury, or train of any great man.

JAMAICA, an island of the West Indies, the largest of the Antilles, lying between 17° and 19° N. Lat. and between 76° and 79° W. Long.; in length near 170 miles, and about 60 in breadth. It approaches in its figure to an oval. The windward passage right before it hath the island of Cuba on the west, and Hispaniola on the east, and is about 20 leagues in breadth.

This island was discovered by admiral Christopher Columbus in his second voyage, who landed upon it May 5. 1494; and was so much charmed with it, as always to prefer it to the rest of the islands: in consequence of which, his son chose it for his dukedom. It was settled by Juan d' Esquivel A. D. 1509, who built the town, which, from the place of his birth, he called *Seville*, and 11 leagues farther to the east stood *Melilla*. Orifon was on the south side of the island, seated on what is now called *Blue Fields River*. All these are gone to decay; but St Jago, now Spanish Town, is still the capital. The Spaniards held this country 160 years, and in their time the principal commodity was cacao; they had an immense stock of horses, asses, and mules, and prodigious quantities of cattle. The English landed here under Penn and Venables, May 11. 1654, and quickly reduced the island. Cacao was also their principal commodity till the old trees decayed, and the new ones did not thrive; and then the planters from Barbadoes introduced sugar-canes, which hath been the great staple ever since.

The prospect of this island from the sea, by reason of its constant verdure, and many fair and safe bays, is wonderfully pleasant. The coast, and for some miles within, the land is low; but removing farther, it rises and becomes hilly. The whole isle is divided by a ridge of mountains running east and west, some rising to a great height: and these are composed of rock, and a very hard clay; through which, however, the rains that fall incessantly upon them have worn long and deep cavities, which they call *gullies*. These mountains, however, are far from being unpleasant, as they are crowned even to their summits by a variety of fine trees. There are also about a hundred rivers that issue from them on both sides; and, though none of them are navigable for any thing but canoes, are both pleasing and profitable in many other respects. The cli-

mate, like that of all countries between the tropics, is very warm towards the sea, and in marshy places unhealthy; but in more elevated situations, cooler; and, where people live temperately, to the full as wholesome as in any part of the West Indies. The rains fall heavily for about a fortnight in the months of May and October; and, as they are the cause of fertility, are styled seasons. Thunder is pretty frequent, and sometimes showers of hail: but ice or snow, except on the tops of the mountains, are never seen; but on them, and at no very great height, the air is exceedingly cold.

The most eastern parts of this ridge are famous under the name of the *Blue Mountains*. This great chain of rugged rocks defends the south side of the island from those boisterous north-west winds, which might be fatal to their produce. Their streams, though small, supply the inhabitants with good water, which is a great blessing, as their wells are generally brackish. The Spaniards were persuaded that these hills abounded with metals: but we do not find that they wrought any mines; or if they did, it was only copper, of which they said the bells in the church of St Jago were made. They have several hot springs, which have done great cures. The climate was certainly more temperate before the great earthquake; and the island was supposed to be out of the reach of hurricanes, which since then it hath severely felt. The heat, however, is very much tempered by land and sea breezes; and it is asserted, that the hottest time of the day is about eight in the morning. In the night, the wind blows from the land on all sides, so that no ships can then enter their ports.

In an island so large as this, which contains above five millions of acres, it may be very reasonably conceived that there are great variety of soils. Some of these are deep, black, and rich, and mixed with a kind of potter's earth; others shallow and sandy; and some of a middle nature. There are many savannahs, or wide plains, without stones, in which the native Indians had luxuriant crops of maize, which the Spaniards turned into meadows, and kept in them prodigious herds of cattle. Some of these savannahs are to be met with even amongst the mountains. All these different soils may be justly pronounced fertile, as they would certainly be found, if tolerably cultivated, and applied to proper purposes. A sufficient proof of this will arise from a very cursory review of the natural and artificial produce of this spacious country.

It abounds in maize, pulse, vegetables of all kinds, meadows of fine grass, a variety of beautiful flowers, and as great a variety of oranges, lemons, citrons, and other rich fruits. Useful animals there are of all sorts, horses, asses, mules, black cattle of a large size, and sheep, the flesh of which is well tasted, though their wool is hairy and bad. Here are also goats and hogs in great plenty; sea and river fish; wild, tame, and water-fowl. Amongst other commodities of great value, they have the sugar-cane, cacao, indigo, pimento, cotton, ginger, and coffee; trees for timber and other uses, such as mahogany, manchineel, white wood, which no worm will touch, cedar, olives, and many more. Besides these, they have fustick, red wood, and various other materials for dyeing. To these we may add a multitude of valuable drugs, such as guaiacum, china, sarsaparilla, cassia, tamarinds, vanillas, and the prickly-pear

Jamaica. or opuntia, which produces the cochineal; with no inconsiderable number of odoriferous gums. Near the coast they have salt-ponds, with which they supply their own consumption, and might make any quantity they pleased.

As this island abounds with rich commodities, it is happy likewise in having a number of fine and safe ports. Point Morant, the eastern extremity of the island, hath a fair and commodious bay. Passing on to the south, there is Port Royal: on a neck of land which forms one side of it, there stood once the fairest town in the island; and the harbour is as fine a one as can be wished, capable of holding a thousand large vessels, and still the station of our Squadron. Old Harbour is also a convenient port, so is Maccary Bay; and there are at least twelve more between this and the western extremity, which is point Negrillo, where our ships of war lie when there is a war with Spain. On the north side there is Orange Bay, Cold Harbour, Rio Novo, Montego Bay, Port Antonio, one of the finest in the island, and several others. The north-west winds, which sometimes blow furiously on this coast, render the country on that side less fit for canes, but pimento thrives wonderfully; and certainly many other staples might be raised in small plantations, which are frequent in Barbadoes, and might be very advantageous here in many respects.

The town of Port Royal stood on a point of land running far out into the sea, narrow, sandy, and incapable of producing any thing. Yet the excellence of the port, the convenience of having ships of seven hundred tons coming close up to their wharfs, and other advantages, gradually attracted inhabitants in such a manner, that though many of their habitations were built on piles, there were near two thousand houses in the town in its most flourishing state, and which let at high rents. The earthquake by which it was overthrown happened on the 7th of June 1692, and numbers of people perished in it. This earthquake was followed by an epidemic disease, of which upwards of three thousand died: yet the place was rebuilt; but the greatest part was reduced to ashes by a fire that happened on the 9th of January 1703, and then the inhabitants removed mostly to Kingston. It was, however, rebuilt for the third time; and was raising towards its former grandeur, when it was overwhelmed by the sea, August 28. 1722. There is, notwithstanding, a small town there at this day. Hurricanes since that time have often happened, and occasioned terrible devastations.

The island is divided into three counties, Middlesex, Surry, and Cornwall; containing 20 parishes, over each of which presides a magistrate styled a *custos*; but these parishes in point of size are a kind of hundreds. The whole contain 36 towns and villages, 18 churches and chapels, and about 23,000 white inhabitants.

The administration of public affairs is by a governor and council of royal appointment, and the representatives of the people in the lower house of assembly. They meet at Spanish Town, and things are conducted with great order and dignity. The lieutenant-governor and commander in chief has L. 5000 currency, or L. 3557 1 : 8 : 6½. Sterl. besides which, he has a house in Spanish town, a pen or a farm adjoining, and a polink or mountain for provisions; a secretary, an under-secretary, and a domestic chaplain.

The honourable the council consists of a president *Jamaica.* and 10 members; with a clerk, at L. 270, chaplain L. 100, usher of the black rod and messenger L. 250.

The honourable the assembly consists of 43 members, one of whom is chosen speaker. To this assembly belong a clerk, with L. 1000 salary; a chaplain, L. 150; messenger, L. 700; deputy, L. 140; and printer, L. 200.

The number of members returned by each parish and county are, for *Middlesex* 17, viz. St Catharine 3, St Dorothy 2, St John 2, St Thomas in the Vale 2, Clarendon 2, Vere 2, St Mary 2, St Ann 2: For *Surry* 16, viz. Kingston 3, Port Royal 3, St Andrew 2, St David 2, St Thomas in the East 2, Portland 2, St George 2: For *Cornwall* 10, viz. St Elizabeth 2, Westmoreland 2, Hanover 2, St James 2, Trelawney 2.

The high court of chancery consists of the chancellor (governor for the time being), 25 masters in ordinary, and 20 masters extraordinary; a register, and clerk of the patents; serjeant at arms, and mace-bearer. The court of vice admiralty has a sole judge, judge surrogate, and commissary, King's advocate, principal register, marshal, and a deputy-marshal. The court of ordinary, consists of the ordinary (governor for the time being), and a clerk. The supreme court of judicature, has a chief justice, L. 120, and 16 assistant judges; attorney-general, L. 400; clerk of the courts, L. 100; clerk of the crown, L. 350; solicitor for the crown; 33 commissioners for taking affidavits; a provost-marshal-general, and eight deputies; 18 barristers, besides the attorney-general and advocate-general; and upward of 120 practising attorneys at law.

The commerce of Jamaica is very considerable, not only with all parts of Great Britain and Ireland, but with Africa, North and South America, the West India islands, and the Spanish main. The ships annually employed are upwards of 500 sail.

The following account of the exports of this island in 1770, as given by Abbe Raynal, but which in several particulars appears to be under-rated, will contribute more than all that hath been said, to show the importance of Jamaica. They consisted in 2249 bales of cotton, which at 10 pounds per bale, the price in the island, amounts to 22,490 l.; 1873 hundred weight of coffee, at three pounds five shillings per hundred, 6088 l.; 2753 bags of ginger, at two pounds five shillings per bag, 6194 l.; 2214 hides, at seven shillings per hide, 773 l.; 16,475 puncheons of rum, at 10 l. per puncheon, 164,750 l. Mahogany, 15,282 pieces and 8500 feet, 50,000 l. Of pimento, 2,089,734 pounds weight, 52,243 l. Sugar, 57,675 hogsheds, 6425 tierces, 52 barrels, at seventeen pounds ten shillings per hoghead, twelve pounds per tierce, and four pounds per barrel, amounting in the whole to 1,086,620 l. Sarsaparilla, 205 bags, at ten pounds per bag, 2250 l. Exports to Great Britain and Ireland, 1,391,210 l. To North America, 146,324 l. To the other islands, 595 l. Total of the exports, 1,538,730 l.

The following is a general view of the property and chief produce of the whole island in 1786, as prefixed by Mr Beckford to his descriptive account of Jamaica †:

Counties.

† *Introd.*
P. 29.

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Jamaica Iambic.	Counties.	Sugar Estates.	Other Settle- ments.	Slaves.	Produce. Hhds. of Sugar.	Cattle.
	Middlesex	323	917	87100	31500	75000
	Surry -	350	540	75600	34900	80000
	Cornwall	388	561	90000	39000	69500
	Total	1061	2018	255700	105400	224500

It should be here observed, that where two hog- heads of sugar are made, there is at least one puncheon of rum; but the proportion has been of late years more considerable: the quantity of the latter will therefore be 52,700 puncheons.

Jamaica
||
Jambolifera

A comparative view between the years 1768 and 1786.

	Middlesex in		Surry in		Cornwall in		Total in		Amount of Incisele.
	1768	1786	1768	1786	1768	1786	1768	1786	
Sugar Estates	239	323	146	350	266	388	651	1061	410
Sugar Hhds.	24050	31500	15010	34900	29100	39000	68160	105400	37240
Negroes	66744	87100	39542	75600	60614	93000	166900	255700	88800
Cattle	59510	75000	21465	80000	54775	69500	135750	224500	88750

From the above scheme it appears, how considerable has been the increase of sugar-estates, and consequently of produce of negroes and cattle in eighteen years: and in the same portion of time (it is said), if proper encouragement were given, they might be augmented in a threefold proportion.

The common valuation of an estate in Jamaica as follows:

Cane land (the canes upon it valued separately) at	Sterling
Plants	£. 22 per acre.
Cane land, in ratoons and young plants	15 ditto.
Pasture land	8 ditto.
Wood land	4 ditto.
Provisions	14 ditto.
Negroes	57 ditto.
Mules	22 ditto.
Steers	10 ditto.
Breeding cattle, &c.	5 ditto.
Works, water, carts, &c.	from 7 to 10,000

If a planter would wish to lease his estate for a number of years, his income would be large if he could get only 10d. sterling a day for his negroes (the loss made good), without requiring any thing for his land or works.

JAMBI, or JAMBIS, a sea-port town and small kingdom of Asia, on the eastern coast of the island of Sumatra. It is a trading place. The Dutch have a fort here; and export pepper from thence, with the best sort of canes. E. Long. 103. 55. S. Lat. 0. 30.

JAMBIA VICUS. See YAMBO.

IAMBIC, in ancient poetry, a sort of verse, so called from its consisting either wholly, or in great part, of iambus's. See IAMBUS.

Ruddiman makes two kinds of iambic, viz. dimeter and trimeter; the former containing four feet, and the latter six. And as to the variety of their feet, they

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consist wholly of iambus's, as in the two following verses of Horace:

Dim. *Inar|sit a|stuo|sus|*
Trim. *Suis|& i|psa Roma vi|ribus|ruit.*

Or, a dactylus, spondeus, anapestus, and sometimes tribrachys, obtain in the odd places; and the tribrachys also in the even places, excepting the last. Examples of all which may be seen in Horace; as,

Dimeter.
1 2 3 4 5 6
Canidi|a tra|savit|dapes|
Videte|prop|rantes domum|
Trimeter.
Quò quò|scel|si ruitis|aut|cur dex|teris.
Prius|que cælum|fides in|serius|mari.
Aliti|bus at|que cani|bus homi|cidæ He|torem.
Pavidum|que lepo|r' aut ad|venam laqueo|gruem.

JAMBLICUS, the name of two celebrated Platonic philosophers, one of whom was of Colchia, and the other of Apamea in Syria. The first, whom Julian equals to Plato, was the disciple of Anatolius and Porphyry, and died under the reign of the emperor Constantine.—The second also enjoyed great reputation. Julian wrote several letters to him, and it is said he was poisoned under the reign of Valens.—It is not known to which of the two we ought to attribute the works we have in Greek under the name of *Jamblicus*, viz. 1. The history of the life of Pythagoras, and the sect of the Pythagoreans. 2. An exhortation to the study of philosophy. 3. A piece against Porphyry's letter on the mysteries of the Egyptians.

JAMBOLIFERA, in botany: A genus of the monogynia order, belonging to the octandria class of plants; and in the natural method ranking with those of which the order is doubtful. The calyx is quadridented; the corolla tetrapetalous, and funnel-shaped; the filaments a little plane; the stigma simple.

IAMBUS,

Iambus,
James.

IAMBUS, in the Greek and Latin prosody, a poetical foot, consisting of a short syllable followed by a long one; as in

ὄντις, *Dei, meas.*

Syllaba longa brevi subiecta vocatur iambus, as Horace expresses it; who also calls the iambus a swift, rapid foot, *pes celeris*.

The word, according to some, took its rise from Iambus, the son of Pan and Echo, who invented this foot; or, perhaps, who only used sharp-biting expressions to Ceres, when afflicted for the death of Proserpine. Others rather derive it from the Greek *ἰαμνός*, *venenum* "poison;" or from *ἰαμνός*, *maledico* "I rail, or revile;" because the verses composed of iambus's were at first only used in satire.

JAMES (St.) called *the Greater*, the son of Zebedee, and the brother of John the evangelist, was born at Bethsaida, in Galilee. He was called to be an apostle, together with St John, as they were mending their nets with their father Zebedee, who was a fisherman; when Christ gave them the name of *Boanerges*, or *Sons of Thunder*. They then followed Christ, were witnesses with St Peter of the transfiguration on mount Tabor, and accompanied our Lord in the garden of olives. It is believed that St James first preached the gospel to the dispersed Jews; and afterwards returned to Judea, where he preached at Jerusalem, when the Jews raised up Herod Agrippa against him, who put him to a cruel death about the year 44. Thus St James was the first of the apostles who suffered martyrdom. St Clement of Alexandria relates, that his accuser was so struck with his constancy, that he became converted and suffered with him. There is a magnificent church at Jerusalem which bears the name of St James, and belongs to the Armenians. The Spaniards pretend, that they had St James for their apostle, and boast of possessing his body; but Baronius, in his *Annals*, refutes their pretensions.

JAMES (St.), called *the Less*, an apostle, the brother of Jude, and the son of Cleophas and Mary the sister of the mother of our Lord, is called in Scripture the *Just*, and the brother of Jesus, who appeared to him in particular after his resurrection. He was the first bishop of Jerusalem, when Ananias II. high priest of the Jews, caused him to be condemned, and delivered him into the hands of the people and the Pharisees, who threw him down from the steps of the temple, when a fuller dashed out his brains with a club, about the year 62. His life was so holy, that Josephus considers the ruin of Jerusalem as a punishment inflicted on that city for his death. He was the author of the epistle which bears his name.

St James of the Sword, (*San Jago del Espada*), a military order in Spain, instituted in 1170, under the reign of Ferdinand II. king of Leon and Galicia. Its end was to put a stop to the incursions of the Moors; three knights obliging themselves by a vow to secure the roads. An union was proposed and agreed to in 1170 between these and the canons of St Eloy; and the order was confirmed by the pope in 1175. The highest dignity in that order is that of grand master, which has been united to the crown of Spain. The knights are obliged to make proof of their descent from families that have been noble for four generations on both sides; they must also make it appear, that their

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said ancestors have neither been Jews, Saracens, nor heretics; nor even to have been called in question by the inquisition. The novices are obliged to serve six months in the galleys, and to live a month in a monastery. Heretofore they were truly religious, and took a vow of celibacy; but Alexander III. gave them a permission to marry. They now make no vows but of poverty, obedience, and conjugal fidelity; to which, since the year 1652, they have added that of defending the immaculate conception of the holy Virgin. Their habit is a white cloak, with a red cross on the breast. This is esteemed the most considerable of all the military orders in Spain: the king carefully preserves the office of grand master in his own family, on account of the rich revenues and offices, whereof it gives him the disposal. The number of knights is much greater now than formerly, all the grandees choosing rather to be received into this than into the order of the golden fleece; inasmuch as this puts them in a fair way of attaining to commands, and gives them many considerable privileges in all the provinces of Spain, but especially in Catalonia.

JAMES, the name of several kings of Scotland and of Great Britain. See (*Histories of*) SCOTLAND and BRITAIN.

JAMES I. king of Scotland in 1423, the first of the house of Stuart, was not only the most learned king, but the most learned man of the age in which he flourished. This ingenious and amiable prince fell into the hands of the enemies of his country in his tender youth, when he was flying from the snares of his unnatural ambitious uncle, who governed his dominions, and was suspected of designs against his life. Having secretly embarked for France, the ship was taken by an English privateer off Flamborough head; and the prince and his attendants (among whom was the earl of Orkney) were confined in a neighbouring castle until they were sent to London. See (*History of*) SCOTLAND.

The king of England knew the value of the prize he had obtained, and kept it with the most anxious care. The prince was conducted to the Tower of London immediately after he was seized, April 12. A. D. 1405, in the 13th year of his age; and there kept a close prisoner till June 10. A. D. 1407, when he was removed to the castle of Nottingham, from whence he was brought back to the Tower, March 1. A. D. 1414, and there confined till August 3. in the same year, when he was conveyed to the castle of Windsor, where he was detained till the summer of A. D. 1417; when Henry V. for political reasons, carried him with him into France in his second expedition. In all these fortresses, his confinement, from his own account of it, was so severe and strict, that he was not so much as permitted to take the air. In this melancholy situation, so unsuitable to his age and rank, books were his chief companions, and study his greatest pleasure. He rose early in the morning, immediately applied to reading, to divert him from painful reflections on his misfortunes, and continued his studies, with little interruption, till late at night. James being naturally sensible, ingenious, and fond of knowledge, and having received a good education in his early youth, under the direction of Walter Wardlaw bishop of St Andrew's, by this close application to study, became an universal scholar, an excellent

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poet,

James. poet, and exquisite musician. That he wrote as well as read much, we have his own testimony, and that of all our historians who lived near his time. Bowmaker, the continuator of Fordun, who was his contemporary, and personally acquainted with him, spends ten chapters in his praises, and in lamentations on his death; and, amongst other things, says, that his knowledge of the scriptures, of law, and philosophy, was incredible. Hector Boyse tells us, that Henry IV. and V. furnished their royal prisoner with the best teachers in all the arts and sciences; and that, by their assistance, he made great proficiency in every part of learning and the fine arts; that he became a perfect master in grammar, rhetoric, poetry, music, and all the secrets of natural philosophy, and was inferior to none in divinity and law. He observes further, that the poems he composed in his native tongue were so beautiful, that you might easily perceive he was born a poet; but that his Latin poems were not so faultless; for though they abounded in the most sublime sentiments, their language was not so pure, owing to the rudeness of the times in which he lived. This prince's skill in music was remarkable. Walter Bower abbot of Inch-collm, who was intimately acquainted with that prince, assures us, that he excelled all mankind in that art both vocal and instrumental; and that he played on eight different instruments (which he names), and especially on the harp, with such exquisite skill, that he seemed to be inspired *. King James was not only an excellent performer, but also a capital composer, both of sacred and secular music; and his fame on that account was extensive, and of long duration. Above a century after his death, he was celebrated in Italy as the inventor of a new and pleasing kind of melody, which had been admired and imitated in that country. This appears from the following testimony of Alessandro Tassoni, a writer who was well informed, and of undoubted credit. "We may reckon among us moderns, James king of Scotland, who not only composed many sacred pieces of vocal music, but also of himself invented a new kind of music, plaintive and melancholy, different from all other; in which he hath been imitated by Carlo Gesualdo prince of Venosa, who, in our age, hath improved music with new and admirable inventions."† As the prince of Venosa imitated king James, the other musicians of Italy imitated the prince of Venosa. "The most noble Carlo Gesualdo, the prince of musicians of our age, introduced such a style of modulation, that other musicians yielded the preference to him; and all singers and players on stringed instruments, laying aside that of others, every where embraced his ‡. All the lovers, therefore, of Italian or of Scotch music, are much indebted to the admirable genius of king James I. who, in the gloom and solitude of a prison, invented a new kind of music, plaintive indeed, and suited to his situation, but at the same time so sweet and soothing, that it hath given pleasure to millions in every succeeding age.

As James I. of Scotland was one of the most accomplished princes that ever filled a throne, he was also one of the most unfortunate. After spending almost 20 years in captivity, and encountering many difficulties on his return into his native kingdom, he was murdered by barbarous assassins in the prime of

life. In the monuments of his genius, he hath been almost equally unfortunate. No vestiges are now remaining of his skill in architecture, gardening, and painting; though we are assured by one who was well acquainted with him, that he excelled in all these arts *. Many of the productions of his pen have also perished; for he tells us himself that he wrote much †; and we know of only three of his poems that are now extant, viz. Christ's Kirk on the Green—Peebles at the Play—and the King's Quair, which was lately discovered by Mr Warton, and hath been published by another gentleman ‡. But slender as these remains are, they afford sufficient evidence, that the genius of this royal poet was not inferior to that of any of his contemporaries; and that it was equally fitted for the gayest or the gravest strains.

JAMES II. king of Scotland, 1437, succeeded his father, being then not seven years of age; and was killed at the siege of Roxburgh in 1460, aged 29.

JAMES III. king of Scotland, succeeded his father, in 1460, in the 7th year of his age. The most striking feature in the character of this prince, unjustly represented as tyrannical by several historians, was his fondness for the fine arts, and for those who excelled in them, on whom he bestowed more of his company, confidence, and favour, than became a king in his circumstances. This excited in his fierce and haughty nobles dislike and contempt of their sovereign, and indignation against the objects of his favour; which produced the most pernicious consequences, and ended in a rebellion that proved fatal to James, who was slain in 1488, aged 36.

JAMES IV. king of Scotland, succeeded his father in 1488. He was a pious and valiant prince; subdued his rebellious subjects; and afterwards, taking part with Louis XII. against Henry VIII. of England, he was slain in the battle of Flouden-Field in 1513, aged 41.—This king is acknowledged to have had great accomplishments both of mind and body. His Latin epistles are classical, compared with the barbarous style of the foreign princes with whom he corresponded. Like his father, he had a taste for the fine arts, particularly that of sculpture. The attention he paid to the civilization of his people, and his distribution of justice, merit the highest praise. After all, the virtues of James appear to have been more shining than solid; and his character was that of a fine gentleman and a brave knight, rather than a wise or a great monarch. At the time of his death, he was only in his forty-first year. Like all the princes of his family (to his great grandson James VI.) his person was handsome, vigorous, and active. From their coins it does not appear, that either he, or any of his predecessors of the Stuart race, wore their beards, as did all his successors, to the reign of Charles II.

JAMES V. king of Scotland, in 1513, was but 18 months old when his father lost his life. When of age, he assisted Francis I. king of France against the emperor Charles le Quint; for which service Francis gave him his eldest daughter in marriage, in 1535. This princess died in two years; and James married Mary of Lorraine, daughter of Claud duke of Guise, and widow of Louis d'Orleans, by whom he had only one child, the unfortunate Mary queen of Scots, born only eight days before his death, which happened December

* *Scoticron.*
lib. 16.
cap. 30.
† *King's*
Quair,
canto 1.
stan. 13.

‡ See *Poetical*
Remains
of James I.
Edin. 1783.
and Warton's *Hist.*
Poet vol. II.
p. 125.

* *Scoticron.*
lib. 16.
p. 28.

† *Alessandro*
Tassoni. *Pen.*
seri Diversi,
lib. 10. Sir
John Haw-
kin's, vol. 4.
p. 5, 6.

‡ *Id.* vol. 3.
p. 212.

James. cember 13. 1542, in the 35th year of his age. This was the first prince of his family who died a natural death, since its elevation to the throne. He died, however, of a broken heart, occasioned by differences with his barons. He was formed by nature to be the ornament of a throne and a blessing to his people; but his excellent endowments were rendered in a great measure ineffectual by an improper education. Like most of his predecessors, he was born with a vigorous, graceful person, which, in the early part of his reign, was improved by all the manly exercises then in use. This prince was the author of a humorous composition in poetry, which goes by the name of the *Gaberrunzie Man*.

JAMES VI. king of Scotland in 1567, and of England in 1603, was son of Mary queen of Scots; whom he succeeded in Scotland, as he did Elizabeth in England. Strongly attached to the Protestant religion, he signalled himself in its support; which gave rise to the horrid conspiracy of the Papists to destroy him and all the English nobility by the Gunpowder Plot, discovered November 5. 1605. The following year, a political test of loyalty was required, which secured the king's person, by clearing the kingdom of those disaffected Roman-Catholic subjects who would not submit to it. The chief glory of this king's reign consisted in the establishment of new colonies, and the introduction of some manufactures. The nation enjoyed peace, and commerce flourished during his reign. Yet his administration was despised both at home and abroad: for, being the head of the Protestant cause in Europe, he did not support it in that great crisis, the war of Bohemia; abandoning his son-in-law the elector Palatine; negotiating when he should have fought, deceived at the same time by the courts of Vienna and Madrid; continually sending illustrious ambassadors to foreign powers, but never making a single ally. He valued himself much upon his polemical writings; and so fond was he of theological disputations, that to keep them alive, he founded, for this express purpose, Chelsea-college; which was converted to a much better use by Charles II. His *Basilicon Doron*, Commentary on the Revelation, writings against Bellarmine, and his *Demonologia*, or doctrine of witchcraft, are sufficiently known. There is a collection of his writings and speeches in one folio volume. Several other pieces of his are extant; some of them in the Caballa, others in manuscript in the British Museum, and others in Howard's collection. He died in 1625, in the 59th year of his age, and 23d of his reign.

JAMES II. king of England, Scotland, &c. 1685, grandson of James I. succeeded his brother Char. II. It is remarkable, that this prince wanted neither courage nor political abilities whilst he was duke of York; on the contrary, he was eminent for both: but when he ascended the throne, he was no longer the same man. A bigot from his infancy to the Romish religion and to its hierarchy, he sacrificed every thing to establish them, in direct contradiction to the experience he had acquired, during the long reign of his brother, of the genius and character of the people he was to govern. Guided by the Jesuit Peters his confessor, and the infamous chancellor Jeffries, he violated every law enacted for the security of the Protestant religion; and then, unable to face the resentment of his

injured subjects, he fled like a coward, instead of disarming their rage by a dismissal of his Popish ministers and priests. He rather chose to live and die a bigot, or, as he believed, a saint, than to support the dignity of his ancestors, or perish beneath the ruins of his throne. The consequence was the revolution in 1689. James II. died in France in 1710, aged 68. He wrote Memoirs of his own life and campaigns to the restoration; the original of which is preserved in the Scotch college at Paris. This piece is printed at the end of Ramsay's life of Marshal Turenne. 2. Memoirs of the English affairs, chiefly naval, from the year 1660 to 1673. 3. The royal sufferer, king James II. consisting of meditations, soliloquies, vows, &c. said to be composed by his majesty at St Germain. 4. Three letters; which were published by William Fuller, gent. in 1702, with other papers relating to the court of St Germain, and are said in the title-page to be printed by command.

JAMES (Thomas), a learned English critic and divine, born about the year 1571. He recommended himself to the office of keeper of the public library at Oxford, by the arduous undertaking of publishing a catalogue of the MSS in each college library at both universities. He was elected to this office in 1602, and held it 18 years, when he resigned it to prosecute his studies with more freedom. In the convocation held with the parliament at Oxford in 1625, of which he was a member, he moved to have proper commissioners appointed to collate the MSS of the fathers in all the libraries in England, with the Popish editions, in order to detect the forgeries in the latter; but this proposal not meeting with the desired encouragement, he engaged in the laborious task himself, which he continued until his death in 1629. He left behind him a great number of learned works.

JAMES (Richard), nephew of the former, entered into orders in 1615: but, being a man of humour, of three sermons preached before the university, one concerning the observation of Lent was without a text, according to the most ancient manner; another against the text; and the third beside it. About the year 1619, he travelled through Wales, Scotland, Shetland, into Greenland and Russia, of which he wrote observations. He assisted Selden in composing his *Marmora Arundeliana*; and was very serviceable to Sir Robert Cotton, and his son Sir Thomas, in disposing and settling their noble library. He died in 1638; and has an extraordinary character given him by Wood for learning and abilities.

JAMES (Dr Robert), an English physician of great eminence, and particularly distinguished by the preparation of a most excellent fever-powder, was born at Kiverston in Staffordshire, A. D. 1703: his father a major in the army, his mother a sister of Sir Robert Clarke. He was of St John's-college in Oxford, where he took the degree of A. B. and afterwards practised physic at Sheffield, Lichfield, and Birmingham successively. Then he removed to London, and became a licentiate in the college of physicians; but in what years we cannot say. At London he applied himself to writing as well as practising physic; and in 1743, published a Medicinal Dictionary, 3 vols folio. Soon after he published an English translation, with a Supplement by himself, of *Ramazzini de morbis artificum*;

James's
Powder.

cum; to which he also prefixed a piece of Frederic Hoffman upon Endemial Distempers, 8vo. In 1746, The Practice of Physic, 2 vols 8vo; in 1760, On Canine Madness, 8vo; in 1764, A Dispensatory, 8vo. June 25. 1755, when the king was at Cambridge, James was admitted by mandamus to the doctorship of physic. In 1778, were published, A Dissertation upon Fevers, and A Vindication of the Fever-Powder, 8vo; with A short Treatise on the Disorders of Children, and a very good print of Dr James. This was the 8th edition of the Dissertation, of which the first was printed in 1751; and the purpose of it was, to set forth the success of this powder, as well as to describe more particularly the manner of administering it. The Vindication was posthumous and unfinished: for he died March 23. 1776, while he was employed upon it.—Dr James was married, and left several sons and daughters.

† Vol. I.
p. 366.

JAMES'S Powder, a medicine prepared by the late Dr Robert James, of which the basis has been long known to chemists, though the particular receipt for making it lay concealed in Chancery till made public by Dr Monro in his *Medical and Pharmaceutical Chemistry* †. The following (Dr Monro informs us) is a copy of the receipt, extracted from the Records of Chancery; the inventor, when he took out a patent for selling his powder, having sworn, in the most solemn manner, that it was the true and genuine receipt for preparing it:

'Take antimony, calcine it with a continued protracted heat, in a flat, unglazed, earthen vessel, adding to it from time to time a sufficient quantity of any animal oil and salt, well dephlegmated; then boil it in melted nitre for a considerable time, and separate the powder from the nitre, by dissolving it in water.'

This extract Dr Monro accompanies with the following observations. "When the Doctor first administered his powder, he used to join one grain of the following mercurial preparation to thirty grains of his antimonial powder; but in the latter part of his life he often declared that he had long laid aside the addition of the mercurial. His mercurial, which he called a pill, appears by the records of chancery to have been made in the following manner: 'Purify quicksilver, by distilling it nine times from an amalgam, made with martial regulus of antimony, and a proportional quantity of sal ammoniac; dissolve this purified quicksilver in spirit of nitre, evaporate to dryness, calcine the powder till it becomes of a gold colour; burn spirits of wine upon it, and keep it for use.' Dr James, at the end of the receipt given into chancery, says, 'The dose of these medicines is uncertain; but in general thirty grains of the antimonial and one grain of the mercurial is a moderate dose. Signed and sworn to, by Robert James.'

"I have frequently directed this powder to be given, and have often seen Dr James himself as well as other practitioners administer it, in fevers and in other complaints. Like other active preparations of antimony, it sometimes operates with great violence, even when given in small doses; at other times a large dose produces very little visible effects. I have seen three grains operate briskly, both upwards and downwards; and I was once called to a patient to whom Dr James had himself given five grains of it, and it purged and

vomited the body for twenty-four hours, and in that time gave her between twenty and thirty stools; at other times I have seen a scruple produce little or no visible effect.

"So far as I have observed, I think that the dose of this powder to an adult, is from five to twenty grains; and that, when it is administered, one ought to begin by giving small doses.

"Where patients are strong, and a free evacuation is wanted, this is a useful remedy; and it may be given in small repeated doses as an alterative in many cases; but where patients are weakly and in low fevers, it often acts with too great violence; and I have myself seen instances, and have heard of others from other practitioners, where patients have been hurried to their graves by the use of this powder in a very short time.

"It has been called Dr James's *Fever-Powder*; and many have believed it to be a certain remedy for fevers, and that Dr James had cured most of the patients whom he attended, and who recovered, by the use of this powder. But the bark, and not the antimonial powder, was the remedy which Dr James almost always trusted to for the cure of fevers: he gave his powders only to clear the stomach and bowels; and after he had effected that, he poured in the bark as freely as the patient could swallow it. The Doctor believed all fevers to be more or less of the intermitting kind; and that if there was a possibility of curing a fever, the bark was the remedy to effectuate the cure; for if the fever did not yield to that, he was sure that it would yield to no other remedy whatever, as he has more than once declared to me when I have attended patients in fevers along with him."

JAMES-TOWN, a borough and fair-town of Ireland, in the county of Leitrim, and province of Connaught; situated 5 miles north-west of Carrick, on Shannon, and 73 north-west of Dublin, in north lat. 53° 44. west long. 8° 15. It has a barrack for a company of foot, and returns two members to parliament; patronage in the family of King.—It has three fairs.

St James Day, a festival of the Christian church, observed on the 25th of July, in honour of St James the greater, son of Zebedee.

Epistle of St JAMES, a canonical book of the New Testament, being the first of the *catholic* or *general* epistles; which are so called, as not being written to one but to several Christian churches.

This general epistle is addressed partly to the believing and partly to the infidel Jews; and is designed to correct the errors, soften the ungoverned zeal, and reform the indecent behaviour of the latter; and to comfort the former under the great hardships they then did, or shortly were to suffer, for the sake of Christianity.

JAMESONE (George), an excellent painter, justly termed the *Vandyck of Scotland*, was the son of Andrew Jamesone, an architect; and was born at Aberdeen, in 1586. He studied under Rubens, at Antwerp; and, after his return, applied with indefatigable industry to portraits in oil, though he sometimes practised in miniature, and also in history and landscapes. His largest portraits were somewhat less than life. His earliest works are chiefly on board, afterwards on a fine linen cloth smoothly primed with a proper

James's
Powder
Jamesone.

Jamyn,
Jane.

proper tone to help the harmony of his shadows. His excellence is said to consist in delicacy and softness, with a clear and beautiful colouring; his shades not charged, but helped by varnish, with little appearance of the pencil. When king Charles I. visited Scotland in 1633, the magistrates of Edinburgh, knowing his majesty's taste, employed this artist to make drawings of the Scottish monarchs; with which the king was so pleased, that, inquiring for the painter, he sat to him, and rewarded him with a diamond-ring from his own finger. It is observable, that Jamesone always drew himself with his hat on, either in imitation of his master Rubens, or on having been indulged in that liberty by the king when he sat to him. Many of Jamesone's works are in both the colleges of Aberdeen; and the Sybils there he is said to have drawn from living beauties in that city. His best works are from the year 1630 to his death, which happened at Edinburgh in 1644.

JAMYN (Amadis), a celebrated French poet in the 16th century. He is esteemed the rival of Ronsard, who was his cotemporary and friend. He was secretary and chamber-reader in ordinary to Char. IX. and died about 1585. He wrote, 1. Poetical works, 2 vols. 2. Philosophical discourses to Pasicharis and Rodanthe, with seven academical discourses. 3. A translation of the Iliad of Homer, begun by Hugh Sabel, and finished by Jamyn; with a translation into French verse of the three first books of the Odyssey.

JANE of FLANDERS, a remarkable lady, who seems to have possessed in her own person all the excellent qualities of both sexes, was the wife of John de Mountfort, a competitor for the dukedom of Brittany upon the death of John III. This duke, dying without issue, left his dominions to his niece Jane, married to Charles de Blois nephew to the king of France; but John de Mountfort, brother to the late duke though by a second marriage, claimed the duchy, and was received as successor by the people of Nantes. The greatest part of the nobility swore fealty to Charles de Blois, thinking him best supported. This dispute occasioned a civil war; in the course of which John was taken prisoner, and sent to Paris. This misfortune would have entirely ruined his party, had not his interest been supported by the extraordinary abilities of his wife, Jane of Flanders. Bold, daring, and intrepid, she fought like a warrior in the field; shrewd, sensible, and sagacious, she spoke like a politician in the council; and endowed with the most amiable manners, and winning address, she was able to move the minds of her subjects by the force of her eloquence, and mould them exactly according to her pleasure. She happened to be at Rennes when she received the news of her husband's captivity; but that disaster, instead of depressing her spirits, served only to rouse her native courage and fortitude. She forthwith assembled the citizens; and, holding in her arms her infant son, recommended him to their care and protection in the most pathetic terms, as the male heir of their ancient dukes, who had always governed them with lenity and indulgence, and to whom they had ever professed the most zealous attachment. She declared herself willing to run all hazards with them in so just a cause; pointed out the resources that still remained in the alliance of England; earnestly beseeching them to make one vigorous effort against an usur-

Jane
Janizaries.

per, who being forced upon them by the intrigues of France, would, as a mark of his gratitude, sacrifice the liberties of Brittany to his protector. The people, moved by the affecting appearance, and animated by the noble conduct of the princess, vowed to live and die with her in defending the rights of her family; and their example was followed by almost all the Bretons. The countess went from place to place, encouraging the garrisons of the several fortresses, and providing them with every thing necessary for their subsistence: after which she shut herself up with her son in Hennebon, where she resolved to wait for the succours which the king of England (Edward III.) had promised to send to her assistance. Charles de Blois, accompanied by the Dukes of Burgundy and Bourbon, and many other noblemen, took the field with a numerous army, and having reduced Rennes, laid siege to Hennebon, which was defended by the countess in person. This heroine repulsed the assailants in all their attacks with the most undaunted courage, and observing one day that their whole army had left the camp to join in a general storm, she rushed forth at a postern-gate, with three hundred horse, set fire to their tents and baggage, killed their sutlers and servants, and raised such a terror and consternation through all their quarters, that the enemy gave over their assault, and getting betwixt her and the walls, endeavoured to cut off her retreat to the city. Thus intercepted, she put the spurs to her horse, and, without halting, galloped directly to Brest, which lay at the distance of two-and-twenty miles from the scene of action. There being supplied with a body of five hundred horse, she immediately returned, and fighting her way through one part of the French camp, was received into Hennebon, amidst the acclamations of the people. Soon after this the English succours appeared, and obliged the enemy to raise the siege.

JANEIRO, a province of Brasil in South America, seated between the tropic of Capricorn and 22nd of S. Lat. It is bounded on the north by the province of Spirito Sancto, on the east and south by the Atlantic Ocean, and on the west by the mountains which separate it from Guiana, in Spanish America. This is the most valuable province which the Portuguese are masters of; for they import from thence yearly great quantities of gold and precious stones, which they find in the mountains, to a prodigious value.

JANICULUM, or JANICULARIS, a hill of ancient Rome, added by Ancus Martius; the burial-place of Numa, and of Statius Cæcilius the poet: to the east and south, having the Tiber; to the west, the fields; to the north, a part of the Vatican. So called, either from an ancient city, (Virgil); or because it was a *janua*, or gate, from which to issue out and make incursions on the Tuscans, (Verrius Flaccus.) Now called *Mons Aucus* corruptly. *Montorius*, from its sparkling sands. From this hill, on account of its height, is the most extensive prospect of Rome: but it is less inhabited, because of its gross air; neither is it reckoned among the seven hills. Hither the people retired, and were hence afterwards recalled by Q. Hortensius the dictator, (Pliny.)

JANIZARIES, an order of infantry in the Turkish armies; reputed the grand seignior's foot-guards. Vossius derives the word from *genizers*, which in the Turkish

Janizaries. Turkish language signifies *novi homines* or *militēs*. D' Herbelot tells us, that *jenitcheri* signifies a *new band*, or *troop*; and that the name was first given by Amurath I. called the *Conqueror*, who choosing out one fifth part of the Christian prisoners whom he had taken from the Greeks, and instructing them in the discipline of war and the doctrines of their religion, sent them to Hagi Bektasche (a person whose pretended piety rendered him extremely revered among the Turks), to the end that he might confer his blessing on them, and at the same time give them some mark to distinguish them from the rest of the troops.—Bektasche, after blessing them in his manner, cut off one of the sleeves of the fur-gown which he had on, and put it on the head of the leader of this new militia; from which time, viz. the year of Christ 1361, they have still retained the name *jenitcheri*, and the fur-cap.

As, in the Turkish army, the European troops are distinguished from those of Asia; the janizaries are also distinguished into *janizaries of Constantinople*, and of *Damascus*. Their pay is from two aspers to twelve *per diem*; for when they have a child, or do any signal piece of service, their pay is augmented.—Their dress consists of a dolymen, or long gown, with short sleeves, which is given them annually by the grand seignior on the first day of Ramazan. They wear no turbeau; but, in lieu of that, a kind of cap, which they call *zarcola*, and a long hood of the same stuff hanging on their shoulders. On solemn days they are adorned with feathers, which are stuck in a little case on the fore-part of the bonnet.—Their arms, in Europe, in time of war, are a sabre, a carbine or musket, and a cartouch-box hanging on the left side. At Constantinople, in time of peace, they wear only a long staff in their hand. In Asia, where powder and firearms are more uncommon, they wear a bow and arrows, with a poingard, which they call *haniare*.—Though the janizaries are not prohibited marriage, yet they rarely marry, nor then but with the consent of their officers; as, imagining a married man to make a worse soldier than a bachelor.—It was Osman, or Ottoman, or, as others will have it, Amurath, who first instituted the order of janizaries. They were at first called *jaja*, that is, footmen, to distinguish them from the other Turks, the troops whereof consisted mostly of cavalry. The number of janizaries is generally above 40,000; divided into 162 companies or chambers called *odas*, in which they live together at Constantinople as in a convent. They are of a superior rank to all other soldiers, and are also more arrogant and factious, and it is by them that the public tranquillity is mostly disturbed. The government may therefore be said to be in the hands of the janizaries. They have, however, some good qualities: they are employed to escort travellers, and especially ambassadors and persons of high rank, on the road; in which case, they behave with the utmost zeal and fidelity.

JANIZARIES, at Rome, are officers or pensioners of the pope, called also *participantes*, on account of certain rites or duties which they enjoy in the annates, bulls, or expeditions, and the Roman chancery.—Most authors are mistaken in the nature of their office: the truth is, they are officers of the third bench or college of the Roman chancery. The first bench consists of writers, the second of abbreviators, and the

third of *janizaries*; who are a kind of correctors and revisors of the pope's bulls.

JANSEN (Cornelius), bishop of Ypres, one of the most learned divines of the 17th century, and principal of the sect called from his name *Janseuists*. He was born in Holland of Catholic parents, and studied at Louvain. Being sent to transact some business of consequence relating to the university, into Spain, the Catholic king, viewing with a jealous eye the intriguing policy of France, engaged him to write a book to expose the French to the pope as no good Catholics, since they made no scruple of forming alliances with Protestant states. Jansen performed this task in his *Mars Gallicus*; and was rewarded with a mitre, being promoted to the see of Ypres in 1635. He had, among other writings, before this, maintained a controversy against the Protestants upon the points of grace and predestination; but his *Augustinus* was the principal labour of his life, on which he spent above 20 years. See the next article.

JANSENISTS, in church-history, a sect of the Roman Catholics in France, who followed the opinions of Jansenius, bishop of Ypres, and doctor of divinity of the universities of Louvain and Douay, in relation to grace and predestination.

In the year 1640, the two universities just mentioned, and particularly father Molina and father Leonard Cellus, thought fit to condemn the opinions of the Jesuits on grace and free-will. This having set the controversy on foot, Jansenius opposed to the doctrine of the Jesuits the sentiments of St Augustine; and wrote a treatise on grace, which he intitled *Augustinus*. This treatise was attacked by the Jesuits, who accused Jansenius of maintaining dangerous and heretical opinions; and afterwards, in 1642, obtained of pope Urban VIII. a formal condemnation of the treatise wrote by Jansenius: when the partisans of Jansenius gave out that this bull was spurious, and composed by a person entirely devoted to the Jesuits. After the death of Urban VIII. the affair of Jansenism began to be more warmly controverted, and gave birth to an infinite number of polemical writings concerning grace. And what occasioned some mirth, was the titles which each party gave to their writings: one writer published *The torch of St Augustine*, another found *Snuffers for St Augustine's torch*, and father Veron formed *A gag for the Janseuists*, &c. In the year 1650, 68 bishops of France subscribed a letter to pope Innocent X to obtain an inquiry into and condemnation of the five following propositions, extracted from Jansenius's *Augustinus*: 1. Some of God's commandments are impossible to be observed by the righteous, even though they endeavour with all their power to accomplish them. 2. In the state of corrupted nature, we are incapable of resisting inward grace. 3. Merit and demerit, in a state of corrupted nature, does not depend on a liberty which excludes necessity, but on a liberty which excludes constraint. 4. The Semipelagians admitted the necessity of an inward preventing grace for the performance of each particular act, even for the beginning of faith; but they were heretics in maintaining that this grace was of such a nature, that the will of man was able either to resist or obey it. It is Semipelagianism to say, that Jesus Christ died, or shed his blood, for all mankind in general.

Janſſens.

In the year 1652, the pope appointed a congregation for examining into the dispute in relation to grace. In this congregation Janſenius was condemned; and the bull of condemnation, published in May 1653, filled all the pulpits in Paris with violent outcries and alarms against the heresy of the Janſenists. In the year 1656, pope Alexander VII. issued out another bull, in which he condemned the five propositions of Janſenius. However, the Janſenists affirm, that these propositions are not to be found in this book; but that some of his enemies having caused them to be printed on a sheet, inserted them in the book, and thereby deceived the pope. At last Clement XI. put an end to the dispute by his constitution of July 17. 1705; in which, after having recited the constitutions of his predecessors in relation to this affair, he declares, "That in order to pay a proper obedience to the papal constitutions concerning the present question, it is necessary to receive them with a respectful silence." The clergy of Paris, the same year, approved and accepted this bull, and none dared to oppose it.

This is the famous bull *Unigenitus*, so called from its beginning with the words *Unigenitus Dei Filius*, &c. which has occasioned so much confusion in France.

JANſSENS (Abraham), history-painter, was born at Antwerp in 1569. He was cotemporary with Rubens, and also his competitor, and in many of the finest parts of the art was accounted not inferior to that celebrated master. It is reported, that having wasted his time and his substance by a life of dissipation and pleasure, and falling into necessitous circumstances, which he imputed more to ill fortune than to his own neglect of his business, he grew envious at the grandeur in which Rubens appeared, and impatient at his merit and success; and with peevish insolence challenged him to paint a picture with him only for fame, which he was willing to submit to impartial judges. But Rubens rejected the proposal, answering with modesty, that he freely submitted to him, and the world would certainly do justice to them both.

Sandart, who had seen several of his works, assures us, that he not only gave a fine roundness and relief to his figures, but also such a warmth and clearness to the carnations, that they had all the look of real flesh; and his colouring was as durable as it was beautiful, retaining its original lustre for a number of years. His most capital performance is said to be a resurrection of Lazarus, which is in the cabinet of the elector Palatine, and is an object of admiration to all who behold it.

JANſSENS (Victor Honorius), history-painter, was born at Brussels in 1664, and was a disciple of one Volders, under whose direction he continued for seven years; in which time he gave many proofs of a genius far superior to those who were instructed in the same school. He afterwards went to Rome, where he attended particularly to the works of Raphael; he designed after the antiques, and sketched the beautiful scenes around that city; and in a short time his paintings rose in esteem, and the principal nobility of Rome were desirous to employ him. He associated with Tempesta, the celebrated landscape painter, for several years, and painted the figures in the works of that great master as long as they resided together.

Janſſens, Januarius.

Janſſens composed historical subjects, both in a small and a large size; but he found the demand for his small pictures so considerable, that he was induced to paint most frequently in that size. During 11 years he continued at Rome, which barely sufficed for his finishing those pictures for which he was engaged; nor could he have been even then at his liberty, had he not limited himself to a number, and determined not to undertake more.—Returning to Brussels, his performances were as much admired there as they had before been in Italy; but having married, and gradually become the father of 11 children, he was compelled to change his manner of painting in small, and to undertake only those of the large kind, as being more lucrative, more expeditious, and also more agreeable to his genius and inclination. He adorned most of the churches and palaces of his own country with his compositions.—The invention of this artist was fruitful; he designed correctly, his colouring is natural and pleasing, his pencil free, and the airs of his heads have beauty and elegance. As to the difference between his large and small paintings, it is observed, that in correctness and taste they had an equal degree of merit; but the colouring of the former appears more raw and cold than the colouring of the latter; and it is agreed, that for small historical pictures, he was preferable to all the painters of his time.

JANſSEN (Cornelius), called *Johnſon*, an eminent painter of portraits, was born at Amsterdam (though in the Chronological tables, and in Sandart, it is improperly asserted, that he was born in London), and he resided in England for several years; where he was engaged in the service of king James I. and painted several excellent portraits of that monarch, as also of his children and of the principal nobility of his court. He had not the freedom of hand, nor the grace of Vandyck; but in other respects he was accounted his equal, and in the finishing his pictures superior. His paintings are easily distinguished by their smooth, clear, and delicate tints, and by that character of truth and nature with which they are strongly marked. He generally painted on board; and, for the most part, his draperies are black; probably because the opposition of that tint made his flesh colours appear more beautifully bright, especially in his female figures. It is said that he used a quantity of ultra marine in the black colours, as well as in his carnations; which may be one great cause of their preserving their original lustre even to this day. Frequently he painted in a small size in oil, and often copied his own works in that manner. His fame began to be somewhat obscured, on the arrival of Vandyck in England; and the civil war breaking out some time after, induced him to return to his own country, where his paintings were in the highest esteem. He died in 1685.

St JANUARIUS, the patron-saint of Naples, where his head is occasionally carried in procession, in order to stay the eruption of Vesuvius. The liquefaction of his blood is a famous miracle at Naples. The saint suffered martyrdom about the end of the third century. When he was beheaded, a pious lady of Naples caught about an ounce of his blood, which has been carefully preserved in a bottle ever since, without having lost a single grain of its weight. This of itself, were it equally demonstrable, might be considered.

Januarius, considered as a greater miracle than the circumstance on which the Neapolitans lay the whole stress, viz. that the blood which has congealed, and acquired a solid form by age, is no sooner brought near the head of the saint, than, as a mark of veneration, it immediately liquefies. This experiment is made three different times every year, and is considered by the Neapolitans as a miracle of the first magnitude.

Travels in Italy, vol. ii. p. 279.

The substance in the bottle, which is exhibited for the blood of the saint, has been supposed to be something naturally solid, but which melts with a small degree of heat. When it is first brought out of the cold chapel, it is in its natural solid state; but when brought before the saint by the priest, and rubbed between his warm hands, and breathed upon for some time, it melts; and this is the whole mystery. But Dr Moore*, though he confesses himself unable to explain on what principle the liquefaction depends, is convinced that it must be something different from this: "For he had it (he informs us) from the most satisfactory authority, from those who had opportunities of knowing, and who believe no more in the miracle than the staunchest Protestant, that this congealed mass has sometimes been found in a liquid state in cold weather, before it was touched by the priest, or brought near the head of the saint; and that, on other occasions, it has remained solid when brought before him, notwithstanding all the efforts of the priest to melt it. When this happens, the superstitious, which, at a very moderate calculation, comprehends 99 in 100 of the inhabitants of this city, are thrown into the utmost consternation, and are sometimes wrought up by their fears into a state of mind which is highly dangerous both to their civil and ecclesiastical governors. It is true, that this happens but seldom: for, in general, the substance in the phial, whatever it may be, is in a solid form in the chapel, and becomes liquid when brought before the saint: but as this is not always the case, it affords reason to believe, that whatever may have been the case when this miracle or trick, call it which you please, was first exhibited, the principle on which it depends has somehow or other been lost, and is not now understood fully even by the priests themselves; or else they are not now so expert as formerly. In preparing the substance which represents the saint's blood, so as to make it remain solid when it ought, and liquefy the instant it is required." For the principle on which this pretended miracle is performed, or the composition by which it is or may be performed, see CHEMISTRY, n° 800.

The head and blood of the saint are kept in a kind of press, with folding doors of silver, in the chapel of St Januarius belonging to the cathedral church. The real head is probably not so fresh, and well preserved, as the blood. On that account, it is not exposed to the eyes of the public; but is inclosed in a large silver bust, gilt and enriched with jewels of high value. This being what appears to the people, their idea of the saint's features and complexion are taken entirely from the bust.—The blood is kept in a small repository by itself.

JANUARY, the name of the first month of the year, according to the computation now used in the west. The word is derived from the Latin *Januarius*, a name given it by the Romans from Janus, one of

their divinities, to whom they attributed two faces, because on the one side the first day of January looked towards the new year, and on the other towards the old one. The word *Januarius* may also be derived from *janua* "gate;" in regard this month being the first, is, as it were, the gate of the year.

January and February were introduced into the year by Numa Pompilius; Romulus's year beginning in the month of March.—The kalends, or first day of this month, was under the protection of Juno, and in a peculiar manner consecrated to Janus by an offering of a cake made of new meal and new salt, with new frankincense and new wine. On the first day of January a beginning was made of every intended work, the consuls elect took possession of their office, who, with the flamens, offered sacrifices and prayers for the prosperity of the empire. On this day all animosities were suspended, and friends gave and received new-year's gifts, called *Sirena*. On this day too the Romans above all things took care to be merry and divert themselves, and oftentimes such a scene of drunkenness was exhibited, that they might with propriety enough have distinguished it with the name of *All-fools day*.

The Christians heretofore fasted on the first day of January, by way of opposition to the superstitions and debaucheries of the heathens.

JANUS, in heathen worship, the first king of Italy, who, it is said, received Saturn into his dominions, after his being driven from Arcadia by Jupiter. He tempered the manners of his subjects, and taught them civility; and from him they learned to improve the vine, to sow corn, and to make bread. After his death, he was adored as a god.

This deity was thought to preside over all new undertakings. Hence, in all sacrifices, the first libations of wine and wheat were offered to Janus, all prayers prefaced with a short address to him; and the first month of the year was dedicated to and named from him. See JANUARY.

Janus was represented with two faces, either to denote his prudence, or that he views at once the past and approaching years; he had a sceptre in his right hand, and a key in his left, to signify his extensive authority, and his invention of locks.

Though this is properly a Roman deity, the abbé la Pluche represents it as derived from the Egyptians, who made known the rising of the dog-star, which opened their solar year, with an image with a key in its hand, and two faces, one old and the other young, to typify the old and new year.

Temple of JANUS, in ancient history, a square building at Rome (as some say) of entire brass, erected by Romulus, and so large as to contain a statue of Janus five feet high, with brazen gates on each side, which were always kept open in time of war, and shut in time of peace. But the Romans were so much engaged in war, that this temple was shut only twice from the foundation of Rome till the reign of Augustus, and six times afterwards. It was first shut during the long reign of Numa, who instituted this ceremony. 2. In the year of the city 519, after the end of the first Punic war. 3. By Augustus after the battle of Actium, in the year of Rome 725. 4. On Augustus's return from the war which he had against the Cantabrians in Spain, in the year of Rome 729. 5. Under the same emperor, in

Japan.

744, about five years before the birth of Christ, when there was a general peace throughout the whole Roman empire, which lasted 12 years. 6. Under Nero, 811. 7. Under Vespasian, 824. 8. Under Constantius, when, upon Magnentius's death, he was left sole possessor of the empire, 1105. Some dispute the authority on which it is said to have been shut by Constantius, and say that the last time of its being shut was under Gordian, about the year of Rome 994. Virgil gives us a noble description of this custom, *Æn. lib. iii. ver. 607, &c.* The origin of this custom is not certainly known.

JANUS was also the name of a street in Rome, inhabited for the most part by bankers and usurers. It was so called from two statues of Janus which were erected there, one at the top, the other at the bottom, of the street. The top of the street was therefore called *Janus Summus*, the bottom *Janus Imus*, and the middle *Janus Medius*. Hence Horace, lib. i. *Epist. 1.*

Hec Janus summus ab imo perdocet.

and *Sat. 3. Lib. 2.*—*Postquam*

omnis res mea Janum

Ad medium fracta est.—

JAPAN, a general name for a great number of islands lying between the eastern coast of Asia and the western one of America, and which all together form a large and potent empire. They extend from the 30th to the 41st degree of latitude, and from the 130th to the 147th of east longitude.

Were South and North Britain divided by an arm of the sea, Japan might be most aptly compared to England, Scotland, and Ireland, with their respective smaller islands, peninsulas, bays, channels, &c. all under the same monarch.

The Europeans call the empire *Japan*; but the inhabitants *Nippon*, from the greatest island belonging to it; and the Chinese *Cippon*, probably on account of its eastern situation; these names signifying, in both languages, the *Basis* or *Foundation of the Sun*. It was first discovered by the Portuguese about the year of Christ 1542.

Most of the islands which compose it are surrounded with such high craggy mountains, and such shallow and boisterous seas, that sailing about them is extremely dangerous; and the creeks and bays are choaked up with such rocks, shelves, and sands, that it looks as if Providence had designed it to be a kind of little world by itself. These seas have likewise many dangerous whirlpools, which are very difficult to pass at low water, and will suck in and swallow up the largest vessels, and all that comes within the reach of their vortex, dashing them against the rocks at the bottom; inasmuch that some of them are never seen again, and others thrown upon the surface at some miles distance. Some of these whirlpools also make a noise terrible to hear.

The Chinese pretend that the Japan islands were first peopled by themselves: but it is more probable that the original inhabitants were a mixture of different nations, driven thither by those tempestuous seas, and at different times.

As these islands lie in the fifth and sixth climates, they would be much hotter in summer than England, were not the heats refreshed by the winds which continually blow from the sea around them, and to which they are much exposed by the height of their situa-

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tion: this circumstance, however, not only renders their winters excessive cold, but the seasons more inconstant. They have great falls of snow in winter, which are commonly followed by hard frosts. The rains in summer are very violent, especially in the months of June and July, which on that account are called *sai-fuki*, or *water months*. The country is also much subject to dreadful thunders and lightnings, as well as storms and hurricanes, which frequently do a great deal of damage.

The soil, though naturally barren and mountainous, by the industry of the inhabitants, not only supplies them with every necessary of life, but also furnishes other countries with them; producing, besides corn, the finest and whitest rice and other grains, with a great variety of fruits, and vast numbers of cattle of all sorts. Besides rice, and a sort of wheat and barley, with two sorts of beans, they have Indian wheat, millet, and several other kinds in great abundance. Their seas, lakes, and rivers, abound with fish; and their mountains, woods, and forests, are well stocked with horses, elephants, deer, oxen, buffaloes, sheep, hogs, and other useful animals. Some of their mountains also are enriched with mines of gold, silver, and copper, exquisitely fine, besides tin, lead, iron, and various other minerals and fossils; whilst others abound with several sorts of marble and precious stones. Of these mountains, some may be justly ranked among the natural rarities of this country; one, in particular, in the great island of Nippon, is of such prodigious height as to be easily seen forty leagues off at sea, though its distance from the shore is about eighteen. Some authors think it exceeds the famous Peak of Teneriffe; but it may rather be called a cluster or group of mountains, among which are no less than eight dreadful volcanoes, burning with incredible fury, and often laying waste the country round about them: but, to make some amends, they afford great variety of medicinal waters, of different degrees of heat; one of these, mentioned by Varenus, is said to be as hot as burning oil, and to scorch and consume every thing thrown into it.

The many brooks and rivers that have their sources among the mountains, form a great number of delightful cascades, as well as some dreadful cataracts. Among the great variety of trees in the forests here, the cedars exceed all of that kind through India, for straightness, height, and beauty. They abound in most of the islands, especially the largest.

Their seas, besides fish, furnish them with great quantities of red and white coral, and some pearls of great value, besides a variety of sea-plants and shells; which last are not inferior to those that are brought from Amboyna, the Molucca and other easterly islands.

The vast quantity of sulphur with which most of the Japan islands abound, makes them subject to frequent and dreadful earthquakes. The inhabitants are so accustomed to them, that they are scarcely alarmed at any, unless they chance to be very terrible indeed, and lay whole towns in ruins, which very often proves the case. On these occasions, they have recourse to extraordinary sacrifices, and acts of worship, to their deities or demons, according to the different notions of each sect, and sometimes even proceed to offer human victims: but in this case they only take some of the vilest and most abandoned fellows they can meet with,

Japan.

Japan.

with, because they are only sacrificed to the malevolent deities.

The religion throughout Japan, it is well known, is Pagan, split into several sects, who live together in the greatest harmony. Every sect has its own temples and priests. The spiritual emperor the Dairi, is the chief of their religion. They acknowledge and honour a Supreme Being. The author of this relation (Dr Thunberg) saw two temples of the God of gods of a majestic height. The idol that represented this god was of gilded wood, and of so prodigious a size, that upon his hands six persons might sit in the Japanese fashion; his shoulders were five toises broad. In the other temple, the infinite power of this god was represented by little gods to the number of 33,333, all standing round the great idol that represented God. The priests, who are numerous in every temple, have nothing to do but to clean the pavement, light the lamps, and dress the idol with flowers. The temples are open to every body, even to the Hollanders; and in case they are in want of a lodging in the suburbs, when they go to the court of Jedo, they are entertained with hospitality in these temples.

Christianity, if Popery deserves that name, had once made a considerable progress in this country, in consequence of a mission conducted by the Portuguese and Spanish Jesuits; amongst whom the famous saint Francis Xavier was employed, but soon relinquished the service. There were also some Franciscan friars of Spain engaged at last. The Jesuits and friars were supplied from Goa, Macao, and the Manillas. At first the undertaking proceeded with the most rapid success, but ended at last in the most tragical manner, all owing to the pride and haughtiness, the misconduct, rapacity, and senseless extravagant conspiracy of the fathers against the state. This folly and madness produced a persecution of 40 years duration, terminated by a most horrible and bloody massacre, not to be paralleled in history. After this the Portuguese, as likewise the Christian religion, were totally expelled the country, and the most effectual means taken for preventing their return. The natives are for this purpose prohibited from going out of the country; and all foreigners are excluded from an open and free trade; for as to the Dutch and Chinese, under which last name some other eastern nations go thither, they are shut up whilst they remain there, and a most strict watch is set upon them, inasmuch that they are no better than prisoners; and the Dutch, it is said, to obtain a privilege even so far, declared themselves to be no Christians, but Dutchmen. This calumny, however, Dr Kempfer has endeavoured to wipe off, but not altogether to satisfaction.

It was about the year of Christ 1549, or six years after the first discovery, that the fathers of the society arrived there, being induced by the favourable representations of a young Japanese who had fled to Goa. Till the year 1625, or near 1630, the Christian religion spread through most of the provinces of the empire, many of the princes and lords openly embracing it; and "there was very good reason to hope, that within a short compass of time the whole empire would have been converted to the faith of our Saviour, had not the ambitious views, and the impatient endeavours of the fathers to reap the temporal as well as the spiritual fruits of their care and labour, so provoked the supreme majesty of the empire as to raise against themselves and

Japan.

their converts a persecution which hath not its parallel in history, whereby the religion they preached, and all those that professed it, were in a few years time entirely exterminated."—The fathers had made a progress so great, that the princes of Bungu, Arima, and Omura, who had been baptized, "sent, in the year 1582, some of their nearest relations, with letters and presents, to pay homage to the then pope, Gregory XIII. and to assure his holiness of their filial submission to the church; an account of which most celebrated embassy hath been given in the works of that incomparable historian Thauus, and by many other Roman catholic writers."

But notwithstanding this pleasing prospect, the emperor, anno 1586, issued proclamations for the suppression of the religion, and the persecution began. This, however, at first had not that effect which the government expected; for though, according to the letters of the Jesuits, 20,570 persons suffered death for the faith of Christ in the year 1590 only, yet in 1591 and 1592, when all the churches were actually shut up, they made 12,000 new converts. The business was finally concluded by the massacre at Simabara, about the year 1640. The reasons of the emperor's proclamations, making it death to embrace the religion, were as follows: 1. The new religion occasioned considerable alterations in the Japanese church, and was prejudicial in the highest degree to the heathen clergy. 2. It was feared the innovation in religion might be attended with fatal consequences even in regard to the sick; but what more immediately gave rise to them was, as the Japanese of credit confessed to Dr Kempfer, pride and covetousness; pride among the great ones, and covetousness in people of less note; the spiritual fathers aiming not only at the salvation of their souls, but having an eye also to their money and lands, and the merchants disposing of their goods in the most usurious and unreasonable manner. To confine ourselves to the clergy here: they "thought it beneath their dignity to walk on foot any longer; nothing would serve them but they must be carried about in stately chairs, mimicking the pomp of the pope and his cardinals at Rome. They not only put themselves on an equal foot with the greatest men of the empire, but, swelled with ecclesiastical pride, fancied that even a superior rank was nothing but their due. It one day happened, that a Portuguese bishop met upon the road one of the counsellors of state on his way to court. The haughty prelate would not order his chaise to be stopped, in order to alight and to pay his respects to this great man, as is usual in that country; but, without taking any notice of him, say indeed without showing him so much as common marks of civility, he very contemptuously bid his men carry him by. The great man, exasperated at so signal an affront, thenceforward bore a mortal hatred to the Portuguese, and, in the height of his just resentment, made his complaint to the emperor himself, with such an odious picture of the insolence, pride, and vanity of this nation, as he expected could not but raise the emperor's utmost indignation." This happened in 1566. The next year the persecution began anew, and 26 persons, of the number whereof were two foreign Jesuits, and several other fathers of the Franciscan order, were executed on the cross. The emperor Iiojas had usurped the crown on his pupil Tidajori, who, as likewise the greater part of his court and party, had been either Christians themselves, or at least very favourably inclined to that reli-

Japan. gion, so that reasons of state mightily co-operated to forward the persecution.

Some Franciscan friars, whom the governor of the Manilhas had sent as his ambassadors to the emperor of Japan, were guilty at this time of a most imprudent step: they, during the whole time of their abode in the country, preached openly in the streets of Macao where they resided; and of their own accord built a church, contrary to the imperial commands, and contrary to the advice and earnest solicitations of the Jesuits.

Some time after, a discovery of a dangerous conspiracy, which the fathers, and the yet remaining adherents of their religion, entered into against the person of the emperor, as a heathen prince, put a finishing stroke to the affair, and hastened the sentence which was pronounced soon after, *that the Portuguese should for ever be banished the emperor's dominions*; for till then the state seemed desirous to spare the merchants and secular persons, for the purpose of continuing trade and commerce with them, which was looked upon as an affair independent of religion. The affair of the conspiracy was as follows: the Dutch had had an eye to the trade of Japan before 1600, and in 1611 had liberty of a free commerce granted them by the imperial letters patent, and had actually a factory at Firando. The Dutch were then at war with Spain, which was then sovereign of the Portuguese dominions; so that it was natural for them to be trying to supplant them. The Portuguese, on their part, made use of all malicious inventions to blacken their characters, calling them rebels and pirates, whence it was natural for the Dutch to endeavour to clear, and even to revenge, themselves. Now they "took an homeward-bound Portuguese ship near the Cape of Good Hope, on board of which they found some traitorous letters to the king of Portugal, written by one captain Moro, who was chief of the Portuguese in Japan, himself a Japanese by birth, and a great zealot for the Christian religion. The Dutch took special care to deliver the said letters to their protector the prince of Firando, who communicated them without loss of time to the governor of Nagasaki, a great friend to the Portuguese. Captain Moro having been taken up, boldly, and with great assurance, denied the fact, and so did all the Portuguese then at Nagasaki. However, neither the governor's favour, nor their constant denial, were able to clear them, and to keep off the cloud which was ready to break over their heads. Hand and seal convinced them; the letter was sent up to court, and captain Moro sentenced to be burnt alive on a pile, which was executed accordingly. This letter laid open the whole plot which the Japanese Christians, in conjunction with the Portuguese, had laid against the emperor's life and throne; the want they stood in of ships and soldiers, which were promised them from Portugal; and the names of the Japanese princes concerned in the conspiracy; and lastly, to crown all, the expectation of the papal blessing. This discovery made by the Dutch was afterwards confirmed by another letter written by the said captain Moro to the Portuguese government at Macao, which was intercepted and brought to Japan by a Japanese ship."

Considering this, and the suspicions which the court had then already conceived against the Portuguese, it was no difficult matter thoroughly to ruin the little credit and favour they had as yet been able to preserve;

and the rather, since the strict imperial orders notwithstanding, they did not leave off privately to bring over more ecclesiastics. Accordingly, in the year 1637, an imperial proclamation was sent to the governors of Nagasaki, with orders to see it put in execution. It was then the empire of Japan was shut for ever both to foreigners and natives.

Now, although the governors of Nagasaki, on receipt of these commands, took care they should be obeyed, yet the directors of the Portuguese trade maintained themselves in Japan two years longer, hoping to obtain leave to stay in the island of Desima, and there to continue their trade. But they found themselves at last wholly disappointed; for the emperor was resolved to get rid of them; and on assurance given him by the Dutch East India company that they would supply for the future what commodities had been imported by the Portuguese, he declared the Portuguese and the Castilians, and whoever belonged to them, enemies of the empire, forbidding the importation of even the goods of their country, Spanish wines only excepted, for the use of the court. And thus the Portuguese lost their profitable trade and commerce with Japan, and were totally expelled the country before the latter end of the year 1639 or 1640; and thus ended the fruitless popish mission in this empire, for the Portuguese have never been able to restore themselves; and the Dutch have it not in their power to do any one thing in favour of religion, were they so inclined; but, as it appears, they are very indifferent as to that, and are in but little credit with the Japanese.

According to Dr Thunberg's researches, the Japanese have never been subdued by any foreign power, not even in the most remote periods; their chronicles contain such accounts of their valour, as one would rather incline to consider as fabulous inventions than actual occurrences, if later ages had not furnished equal striking proofs of it. When the Tartars, for the first time in 799, had over-run part of Japan, and when, after a considerable time had elapsed, their fleet was destroyed by a violent storm in the course of a single night, the Japanese general attacked, and so totally defeated his numerous and brave enemies, that not a single person survived to return and carry the tidings of such an unparalleled defeat. In like manner, when the Japanese were again, in 1281, invaded by the warlike Tartars, to the number of 240,000 fighting men, they gained a victory equally complete. The extirpation of the Portuguese, and with them of the Christian religion, towards the beginning of the 17th century, as already mentioned, was so complete, that scarce a vestige can now be discerned of its ever having existed there.

With respect to the government of these islands, it is and has been for a long time monarchical; though formerly it seems to have been split into a great number of petty kingdoms, which were at length all swallowed by one. The imperial dignity had been enjoyed, for a considerable time before the year 1500, by a regular succession of princes, under the title of *dairōs*, a name supposed to have been derived from Dairo the head of that family. Soon after that epoch, such a dreadful civil war broke out, and lasted so many years, that the empire was quite ruined. During these distractions and confusions, a common soldier, by name Tayckoy, a person of obscure birth, but

Japan.

but of an enterprising genius, found means to raise himself to the imperial dignity; having, in little more than three years time, by an uncommon share of good fortune, subdued all his competitors and opponents, and reduced all their cities and castles. The dairo, not being in a condition to obstruct or put a stop to his progress, was forced to submit to his terms; and might perhaps have been condemned to much harder, had not Tayckoy been apprehensive lest his soldiers, who still revered their ancient natural monarch, should have revolted in his favour. To prevent this, he granted him the supreme power in all religious matters, with great privileges, honours, and revenues annexed to it; whilst himself remained invested with the whole civil and military power, and was acknowledged and proclaimed king of Japan. This great revolution happened in 1517, and Tayckoy reigned several years with great wisdom and tranquillity; during which he made many wholesome laws and regulations, which still subsist, and are much admired to this day. At his death, he left the crown to his son Tayckofama, then a minor; but the treacherous prince under whose guardianship he was left deprived him of his life before he came of age. By this murder, the crown passed to the family of Jeassama, in which it still continues. Tayckoy and his successors have contented themselves with the title of *cubo*, which, under the daios, was that of prime minister, whose office is now suppressed; so that the *cubo*, in all secular concerns, is quite as absolute and despotic, and has as extensive a power over the lives and fortunes of all his subjects, from the petty kings down to the lowest persons, as ever the daios had. The dairo resides constantly at Mecaco, and the *cubo* at Jeddo.

The inhabitants of Japan are well-grown, agile, and active, and at the same time stout limbed, though they do not equal in strength the northern inhabitants of Europe. The colour of the face is commonly yellow; which sometimes varies to brown, and sometimes to white. The inferior sort, who during their work in summer have often the upper parts of the body naked, are sun-burnt and browner; women of distinction, who never go uncovered into the open air, are perfectly white.

The national character consists in intelligence and prudence, frankness, obedience, and politeness, good-nature and civility, curiosity, industry, and dexterity, economy and sobriety, hardiness, cleanliness, justice, and uprightness, honesty and fidelity; in being also mistrustful, superstitious, haughty, resentful, brave, and invincible.

In all its transactions, the nation shows great intelligence, and can by no means be numbered among the savage and uncivilized, but rather is to be placed among the polished. The present mode of government, admirable skill in agriculture, sparing mode of life, way of trading with foreigners, manufactures, &c. afford convincing proofs of their cunning, firmness, and intrepid courage. Here there are no appearances of that vanity so common among the Asiatics and Africans, of adorning themselves with shells, glass-beads, and polished metal plates: neither are they fond of the useless European ornaments of gold and silver lace, jewels, &c. but are careful to provide themselves from the productions of their own country with neat cloaths well tasted food, and good weapons.

Their curiosity is excessive; nothing imported by the Europeans escapes it. They ask for information concerning every article, and their questions continue till they become wearisome. It is the physician, among the traders, that is alone regarded as learned, and particularly during the journey to court and the residence at Jeddo, the capital of the empire, that he is regarded as the oracle, which they trust can give responses in all things, whether in mathematics, geography, physics, chemistry, pharmacy, zoology, botany, medicine, &c.

Economy has its peculiar abode in Japan. It is a virtue admired as well in the emperor's palace as in the meanest cottage. It makes those of small possessions content with their little, and it prevents the abundance of the rich from overflowing in excess and voluptuousness. Hence it happens, that what in other countries is called scarcity and famine, is unknown here; and that, in so very populous a state, scarce a person in necessity, or a beggar, should be found.

The names of families, and of single persons, are under very different regulations from ours. The family name is never changed, but is never used in ordinary conversation, and only when they sign some writing; to which they also for the most part affix their seal. There is also this peculiarity, that the surname is always placed first; just as in botanical books the generic name is always placed before the specific name. The prænomen is always used in addressing a person; and it is changed several times in the course of life. A child receives at birth from its parents a name, which is retained till it has itself a son arrived at maturity. A person again changes his name when he is invested with any office; as also when he is advanced to an higher trust: some, as emperors and princes, acquire a new name after death. The names of women are less variable; they are in general borrowed from the most beautiful flowers.

After marriage, the wife is confined to her own apartment, from whence she hardly ever stirs, except once a-year to the funeral-rites of her family; nor is she permitted to see any man, except perhaps some very near relation, and that as seldom as can be. The wives, as well as in China and other parts of the east, bring no portion with them, but are rather bought by the husband of their parents and relations. The bridegroom most commonly sees his bride for the first time upon her being brought to his house from the place of the nuptial ceremony: for in the temple where it is performed she is covered over with a veil, which reaches from the head to the feet. A husband can put his wives to a more or less severe death, if they give him the least cause of jealousy, by being seen barely to converse with another man, or suffering one to come into their apartment.

The dress of the Japanese deserves, more than that of any other people, the name of national; since they are not only different from that of all other men, but are also of the same form in all ranks, from the monarch to his meanest subject, as well as in both sexes; and what exceeds all credibility, they have not been altered for at least 2444 years. They universally consist of night-gowns, made long and wide, of which several are worn at once by all ranks and all ages. The more distinguished and the rich have them of the finest

finest silk; the poorer sort of cotton. Those of the women reach down to the ground, and sometimes have a train; in the men, they reach down to the heels: travellers, soldiers, and labourers, either tuck them up, or wear them only down to the knees. The habit of the men is generally of one colour; the women have theirs variegated and frequently with flowers of gold interwoven. In summer, they are either without lining, or have but a thin one; in winter they are stuffed to a great thickness with cotton or silk. The men seldom wear a great number; but the women thirty, fifty, or more, all so thin, that they scarce together amount to five pounds. The undermost serves for a shirt, and is therefore either white or blue, and for the most part thin and transparent. All these gowns are fastened round the waist with a belt, which in the men are about a hand's-breadth, in the women about a foot; of such a length that they go twice round the waist, and afterwards are tied in a knot with many ends and bows. The knot, particularly among the fair sex, is very conspicuous, and immediately informs the spectator whether they are married or not. The unmarried have it behind, on their back; the married before. In this belt the men fix their sabres, fans, pipe, tobacco, and medicine boxes. In the neck the gowns are always cut round, without a collar; they therefore leave the neck bare; nor is it covered with cravat, cloth, or any thing else. The sleeves are always ill-made, and out of all proportion wide: at the opening before, they are half sewed up, so that they form a sack, in which the hands can be put in cold weather; they also serve for a pocket. Girls in particular have their sleeves so long that they reach down to the ground. Such is the simplicity of their habit, that they are soon dressed; and to undress, they need only open their girdle and draw in their arms.

As the gowns, from their length, keep the thighs and legs warm, there is no occasion for stockings; nor do they use them in all the empire. Among poorer persons on a journey, and among soldiers, who have not such long gowns, one sees buskins of cotton. Shoes, or, more properly speaking, slippers, are, of all that is worn by the Japanese, the simplest, the meanest, and the most miserable, though in general use among high and low, rich and poor. They are made of interwoven rice-straw; and sometimes, for persons of distinction, of reeds split very thin. They consist only of a sole, without upper-leathers or quarters. Before, there passes over, transversely, a bow of linen, of a finger's breadth: from the point of the shoe to this bow goes a thin round band, which running within the great toe, serves to keep the shoe fixed to the foot. The shoe being without quarters, slides, during walking, like a slipper. Travellers have three bands of twisted straw, by which they fasten the shoe to the foot and leg, to prevent its falling off. The Japanese never enter their houses with shoes, but put them off in the entrance. This precaution is taken for the sake of their neat carpets. During the time the Dutch reside in Japan, as they have sometimes occasion to pay the natives visits in their houses, and as they have their own apartment at the factory covered with the same sort of carpets, they do not wear European shoes, but have in their stead red, green, or black

slippers; which can easily be put off at entering in. They, however, wear stockings, with shoes of cotton, fastened by buckles. These shoes are made in Japan, and may be washed whenever they become dirty.

The way of dressing the hair is not less peculiar to this people, and less universally prevalent among them, than the use of their long gowns. The men shave the head from the forehead to the neck; and the hair remaining on the temples, and in the nape, is well besmeared with oil, turned upwards, and then tied with a white paper thread, which is wrapped round several times. The ends of the hair beyond the head, are cut crossways, about a finger's length being left. This part, after being pasted together with oil, is bent in such a manner that the point is brought to the crown of the head; in which situation it is fixed by passing the same thread round it once. Women, except such as happen to be separated from their husbands, shave no part of their head.

The head is never covered with hat or bonnet in winter or in summer, except when they are on a journey; and then they use a conical hat, made of a sort of grass, and fixed with a ribband. Some travelling women, who are met with on the roads, have a bonnet like a shaving-basin inverted on the head, which is made of cloth, in which gold is interwoven. On other occasions, their naked heads are preserved, both from rain and the sun, by umbrellas. Travellers, moreover, have a sort of riding-coat, made of thick paper oiled. They are worn by the upper servants of princes, and the suite of other travellers. Dr Thunberg and his fellow-travellers, during their journey to court, were obliged to provide such for their attendants when they passed through the place where they are made.

A Japanese always has his arms painted on one or more of his garments, especially on the long and short gowns, on the sleeves, or between the shoulders; so that nobody can steal them; which otherwise might easily happen in a country where the clothes are so much alike in stuff, shape, and size.

The weapons of the Japanese consist of a bow and arrow, sabre, halbert, and musket. The bows are very large, and the arrows long, as in China. When the bows are to be bent and discharged, the troop always rests on one knee, which hinders them making a speedy discharge. In the spring, the troops assemble to practise shooting at a mark. Muskets are not general; Dr Thunberg only saw them in the hands of persons of distinction, in a separate and elevated part of the audience room. The barrel is of the common length; but the stock is very short, and there is a match in the lock. The sabre is their principal and best weapon, which is universally worn, except by the peasants. They are commonly a yard long, a little crooked, and thick in the back. The blades are of an incomparable goodness, and the old ones are in very high esteem. They are far superior to the Spanish blades so celebrated in Europe. A tolerably thick nail is easily cut in two without any damage to the edge; and a man, according to the account of the Japanese, may be cleft asunder. A separate sash is never used, but the sword is stuck in the belt, on the left side, with the edge upwards, which to a European appears ridiculous. All persons in office wear two such sabres, one of their own, and the other the sword of

Japan. *office*, as it is called; the latter is always the longer. Both are worn in the belt on the same side, and so disposed as to cross each other. When they are sitting, they have their sword of office laid on one side or before them.

The sciences are very far from having arrived at the same height in Japan as in Europe. The history of the country is, notwithstanding, more authentic, perhaps, than that of any other country; and it is studied, without distinction, by all. Agriculture, which is considered as the art most necessary, and most conducive to the support and prosperity of the kingdom, is no where in the world brought to such perfection as here; where neither civil nor foreign war, nor emigration, diminishes population; and where a thought is never entertained, either of getting possession of other countries, or to import the useless and often hurtful productions of foreign lands; but where the utmost care is taken that no turf lies uncultivated, and no produce of the earth unemployed. Astronomy is pursued and respected; but the natives are unable, without the aid of Chinese, and sometimes of Dutch almanacks, to form a true calendar, or calculate an eclipse of the sun or moon within minutes and seconds. Medicine has neither arrived, nor is it likely to arrive, at any degree of perfection. Anatomy is totally unknown; the knowledge of diseases imperfect, intricate, and often fabulous. Botany, and the knowledge of medicines, constitute the whole of their skill. They use only simples; and these generally in diuretic and diaphoretic decoctions. They are unacquainted with compound medicines. Their physicians always indeed feel the pulse; but they are very tedious, not quitting it for a quarter of an hour; besides, they examine first one, and then the other arm, as if the blood was not driven by the same heart to both pulses. Besides those diseases which they have in common with other countries, or peculiar to themselves, the venereal disease is very frequent, which they only understood how to alleviate by decoctions, thought to purify the blood. Salivation, which their physicians have heard mentioned by the Dutch surgeons, appears to them extremely formidable, both to conduct and to undergo; but they have lately learned the art of employing the sublimate with much success.—Jurisprudence is not an extensive study in Japan. No country has thinner law-books, or fewer judges. Explanations of the law, and advocates, are things altogether unknown; but no where, perhaps, are the laws more certainly put in force, without respect to persons, without partiality or violence. They are very strict, and law-suits very short. The Japanese know little more of physics or chemistry than what they have learned of late years of the Europeans.

Their computation of time takes its rise from *Min-o*, or 660 years before Christ. The year is divided according to the changes of the moon; so that some years consist of twelve, and others of thirteen months; and the beginning of the year falls out in February or March. They have no weeks consisting of seven days, or of six working days and a holiday; but the first and fifteenth day of the month serve for a holiday. On these days no work is done. On new-year's-day they go round to wish one another a new year, with their whole families, clad in white and blue chequered,

their holiday dress; and they rest almost the whole of the first month. The day is divided only into twelve hours; and in this division they are directed the whole year by the rising and setting of the sun. They reckon six o'clock at the rising, and six likewise at the setting of the sun. Mid-day and mid-night are always at nine. Time is not measured by clocks or hour-glasses, but with burning matches, which are twisted together like ropes, and divided by knots. When the match is burnt to a knot, which indicates a certain portion of time elapsed, notice is given during the day, by striking the bells of the temples; and in the night, by the watchmen striking two boards against one another. A child is always reckoned a year old at the end of the year of his birth, whether this happen at the beginning or the close. A few days after the beginning of the year, is performed the horrid ceremony of trampling on images representing the cross and the Virgin Mary with her child. The images are of melted copper, and are said to be scarce a foot in height. This ceremony is intended to impress every individual with hatred of the Christian doctrine, and the Portuguese, who attempted to introduce it there; and also to discover whether there is any remnant of it left among the Japanese. It is performed in the places where the Christians chiefly resided. In Nagasaki it lasts four days; then the images are conveyed to the circumjacent places, and afterwards are laid aside against the next year. Every person, except the Japanese governor and his attendants, even the smallest child, must be present; but it is not true, as some have pretended, that the Dutch are also obliged to trample on the image. Overseers are appointed in every place, which assemble the people in companies in certain houses, call over the name of every one in his turn, and take care that every thing goes on properly. The children, not yet able to walk, have their feet placed upon it; older persons pass over it from one side of the room to the other.

The Japanese are much addicted to poetry, music, and painting; the first is said to be grand as to the style and imagery, loftiness, and cadence; but, like that of the Chinese, is not easily understood or relished by the Europeans. The same may be said of their music, both vocal and instrumental; the best of which, of either kind, would hardly be tolerable to a nice European ear.

They pretend, like the Chinese, to have been the inventors of printing from time immemorial, and their method is the same with theirs, on wooden blocks; but they excel them in the neatness of cutting them, as well as in the goodness of their ink and paper. They likewise lay claim to the invention of gunpowder; and are vastly superior to the Chinese in the use of all sorts of fire-arms, especially of artillery, as well as the curi-ousness of their fire-works.

Their manner of writing is much the same as that of the Chinese, viz. in columns from top to bottom, and the columns beginning at the right and ending at the left hand. Their characters were also originally the same, but now differ considerably.

Their language hath some affinity with the Chinese, though it appears from its various dialects to have been a kind of compound of that and other languages, derived from the various nations that first peopled those islands.

Japan.

Japan. islands. It is not only very regular, polite, elegant, and copious, but abounds with a great variety of synonyms, adapted to the nature of the subject they are upon, whether sublime, familiar, or low; and to the quality, age, and sex, both of the speaker and person spoken to.

The Japanese are commonly very ingenious in most handicraft trades; and excel even the Chinese in several manufactures, particularly in the beauty, goodness, and variety of their silks, cottons, and other stuffs, and in their japan and porcelain wares. No eastern nation comes up to them in the tempering and fabricating of scymitars, swords, muskets, and other such weapons.

The Japanese architecture is much in the same taste and style as that of the Chinese, especially as to their temples, palaces, and other public buildings; but in private ones they affect more plainness and neatness than show. These last are of wood and cement, consisting of two stories: they dwell only in the lower; the upper chamber serving for wardrobes. The roofs are covered with rush-mats three or four inches thick. In every house there is a small court, ornamented with trees, shrubs, and flower-pots; as likewise with a place for bathing. Chimnies are unknown in this country, although fire is needed from the cold month of October till the end of March. They heat their rooms with charcoal contained in a copper stove, which they sit round. Their cities are generally spacious, having each a prince or governor residing in them. The capital of Jedo is 21 French leagues in circumference. Its streets are straight and large. There are gates at little distances, with an extremely high ladder, which they ascend to discover fires. Villages differ from cities in having but one street; which often extends several leagues. Some of them are situated so near each other, that they are only separated by a river or a bridge. The principal furniture of the Japanese consists in straw-mats, which serve them for seats and beds; a small table for every one who chooses to eat is the only moveable. The Japanese sit always upon their hams. Before dinner begins, they make a profound bow and drink to the health of the guests. The women eat by themselves. During the courses, they drink a glass of sakki, which is a kind of beer made of rice kept constantly warm; and they drink at each new morsel. Tea and sakki are the most favourite drink of this people; wine and spirits are never used, nor even accepted when offered by the Dutch. Sakki, or rice-beer, is clear as wine, and of an agreeable taste: taken in quantity, it intoxicates for a few moments, and causes headach. Both men and women are fond of tobacco, which is in universal vogue and smoked continually. The gardens about their houses are adorned with a variety of flowers, trees, verdure, baths, terraces, and other embellishments. The furniture and decorations of the houses of persons of distinction consist in japan-work of various colours, curious paintings, beds, couches, screens, cabinets, tables, a variety of porcelain jars, vases, tea-equipage, and other vessels and figures, together with swords, guns, scymitars, and other arms. Their retinues are more or less numerous and splendid according to their rank; but there are few of the lords who have less than 50 or 60 men richly clad and armed, some on foot, but most

on horseback. As for their petty kings and princes, they are seldom seen without 300 or 200 at least, when they either wait on the emperor, which is one half of the year, or attend him abroad.

When a prince or great man dies, there are commonly about 10, 20, or more youths of his household, and such as were his greatest favourites, who put themselves to a voluntary death, at the place where the body is buried or burned: as soon as the funeral pile, consisting of odoriferous woods, gums, spices, oils, and other ingredients, is set on fire, the relations and friends of the deceased throw their presents into it, such as cloaths, arms, victuals, money, sweet herbs, flowers, and other things which they imagine will be of use to him in the other world. Those of the middle or lower rank commonly bury their dead, without any other burning than that of some odoriferous woods, gums, &c. The sepulchres into which the bones and ashes of persons of rank are deposited, are generally very magnificent, and situated at some distance from the towns.

The Dutch and Chinese are the only nations allowed to traffic in Japan. The Dutch at present send but two ships annually, which are fitted out at Batavia, and sail in June, and return at the end of the year. The chief merchandize is Japanese copper and raw camphor. The wares which the Dutch company import are, coarse sugar, ivory, a great quantity of tin and lead, a little cast iron, various kinds of fine chintzes, Dutch cloth of different colours and fineness, serge wood for dyeing, tortoise-shell, and *costus Arabicus*. The little merchandize brought by the officers on their own account, consists of saffron, theriaca, sealing-wax, glass-beads, watches, &c. &c. About the time when the Dutch ships are expected, several outposts are stationed on the highest hills by the government; they are provided with telescopes, and long before their arrival give the governor of Nagasaki notice. As soon as they anchor in the harbour, the upper and under officers of the Japanese immediately betake themselves on board, together with interpreters; to whom is delivered a chest, in which all the sailors books, the muster-roll of the whole crew, six small barrels of powder, six barrels of balls, six muskets, six bayonets, six pistols, and six swords, are deposited; this is supposed to be the whole remaining ammunition after the Imperial garrison has been saluted. These things are conveyed on shore, and preserved in a separate warehouse, nor are they returned before the day the ship quits the harbour.

Duties are quite unknown as well in the inland parts as on the coast, nor are there any customs required either for exported or imported goods; an advantage enjoyed by few nations. But, to prevent the importation of any forbidden wares, the utmost vigilance is observed; then the men and things are examined with the eyes of Argus. When any European goes on shore, he is examined before he leaves the ship, and afterwards on his landing. This double search is exceedingly strict; so that not only the pockets and cloaths are stroaked with the hands, but the pudenda of the meaner sort are pressed, and the hair of the slaves. All the Japanese who come on board are searched in like manner, except only their superior officers: so also are the wares either exported or imported, first on board, and then at the factory, except the

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the great chests, which are opened at the factory, and so carefully examined that they strike the very sides lest they should be hollow. The bed clothes are often opened, and the feathers examined: rods of iron are run into the pots of butter and confections: a square hole is made in the cheese, and a long-pointed iron is thrust into it in all directions. Their suspicion is carried so far, that they take out and break one or two of the eggs brought from Batavia.

The interpreters are all natives; they speak Dutch in different degrees of purity. The government permits no foreigner to learn their language, lest they should by means of this acquire the knowledge of the manufactures of the country; but forty or fifty interpreters are provided to serve the Dutch in their trade, or on any other occasion.

The interpreters are very inquisitive after European books, and generally provide themselves with some from the Dutch merchants. They peruse them with care, and remember what they learn. They besides endeavour to get instruction from the Europeans; for which purpose they ask numberless questions, particularly respecting medicine, physics, and natural history. Most of them apply to medicine, and are the only physicians of their nation who practise in the European manner, and with European medicines, which they procure from the Dutch physicians. Hence they are able to acquire money, and to make themselves respected.

JAPAN Earth. See *MIMOSA* and *TERRA Japonica*. **JAPANNING**, the art of varnishing and drawing figures on wood, in the same manner as is done by the natives of Japan in the East Indies.

The substances which admit of being japanned are almost every kind that are dry and rigid, or not too flexible; as wood, metals, leather, and paper prepared.

Wood and metals do not require any other preparation, but to have their surface perfectly even and clean: but leather should be securely strained either on frames or on boards; as its bending or forming folds would otherwise crack and force off the coats of varnish: and paper should be treated in the same manner, and have a previous strong coat of some kind of size; but it is rarely made the subject of japanning till it is converted into *papier maché*, or wrought by other means into such form, that its original state, particularly with respect to flexibility, is lost.

One principal variation from the method formerly used in japanning is, the using or omitting any priming or undercoat on the work to be japanned. In the older practice, such priming was always used; and is at present retained in the French manner of japanning coaches and snuff-boxes of the *papier maché*; but in the Birmingham manufacture here, it has been always rejected. The advantage of using such priming or undercoat is, that it makes a saving in the quantity of varnish used; because the matter of which the priming is composed fills up the inequalities of the body to be varnished; and makes it easy, by means of rubbing and water-polishing, to gain an even surface for the varnish: and this was therefore such a convenience in the case of wood, as the giving a hardness and firmness to the ground was also in the case of leather, that it became an established method; and is

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therefore retained even in the instance of the *papier maché* by the French, who applied the received method of japanning to that kind of work on its introduction. There is nevertheless this inconvenience always attending the use of an undercoat of size, that the japan coats of varnish and colour will be constantly liable to be cracked and peeled off by any violence, and will not endure near so long as the bodies japanned in the same manner, but without any such priming; as may be easily observed in comparing the wear of the Paris and Birmingham snuff-boxes; which latter, when good of their kind, never peel or crack, or suffer any damage, unless by great violence, and such a continued rubbing as wastes away the substance of the varnish; while the japan coats of the Parisian crack and fly off in flakes, whenever any knock or fall, particularly near the edges, expose them to be injured. But the Birmingham manufacturers, who originally practised the japanning only on metals, to which the reason above given for the use of priming did not extend, and who took up this art of themselves as an invention, of course omitted at first the use of any such undercoat; and not finding it more necessary in the instance of *papier maché*, than on metals, continue still to reject it. On which account, the boxes of their manufacture are, with regard to the wear, greatly better than the French.

The laying on the colours is gum-water, instead of varnish, is also another variation from the method of japanning formerly practised: but the much greater strength of the work, where they are laid on in varnish or oil, has occasioned this way to be exploded with the greatest reason in all regular manufactures: however, they who may practice japanning on cabinets, or other such pieces as are not exposed to much wear and violence, for their amusement only, and consequently may not find it worth their while to encumber themselves with the preparations necessary for the other methods, may paint with water-colours on an undercoat laid on the wood or other substance of which the piece to be japanned is formed; and then finish with the proper coats of varnish, according to the methods below taught: and if the colours are tempered with the strongest isinglass size and honey, instead of gum-water, and laid on very flat and even, the work will not be much inferior in appearance to that done by the other method, and will last as long as the old japan.

Of JAPAN Grounds.—The proper grounds are either such as are formed by the varnish and colour, where the whole is to remain of one simple colour; or by the varnish either coloured or without colour, on which some painting or other decoration is afterwards to be laid. It is necessary, however, before we proceed to speak of the particular grounds, to show the manner of laying on the priming or undercoat, where any such is used.

This priming is of the same nature with that called *clear-coating*, or vulgarly *clear-coaling*, practised erroneously by the house-painters; and consists only in laying on and drying in the most even manner a composition of size and whiting, or sometimes lime instead of the latter. The common size has been generally used for this purpose; but where the work is of a nicer kind,

Japan. kind, it is better to employ the glover's or the parchment size; and if a third of isinglass be added, it will be still better, and, if not laid on too thick, much less liable to peel and crack. The work should be prepared for this priming, by being well smoothed with the fish-skin or glass-shaver; and, being made thoroughly clean, should be brushed over once or twice with hot size, diluted with two thirds of water, if it be of the common strength. The priming should then be laid on with a brush as even as possible; and should be formed of a size whose consistence is betwixt the common kind and glue, mixed with as much whiting as will give it a sufficient body of colour to hide the surface of whatever it is laid upon, but not more.

*Handmaid
to the Arts.*

If the surface be very clean on which the priming is used, two coats of it laid on in this manner will be sufficient; but if, on trial with a fine wet rag, it will not receive a proper water polish on account of any inequalities not sufficiently filled up and covered, two or more coats must be given it; and whether a greater or less number be used, the work should be smoothed, after the last coat but one is dry, by rubbing it with the Dutch rushes. When the last coat is dry, the water polish should be given, by passing over every part of it with a fine rag gently moistened, till the whole appear perfectly plain and even. The priming will then be completed, and the work ready to receive the painting or coloured varnish; the rest of the proceedings being the same in this case as where no priming is used.

When wood or leather is to be japanned, and no priming is used, the best preparation is to lay two or three coats of coarse varnish composed in the following manner:

"Take of rectified spirit of wine one pint, and of coarse seed-lac and resin each two ounces. Dissolve the seed-lac and resin in the spirit; and then strain off the varnish."

This varnish, as well as all others formed of spirit of wine, must be laid on in a warm place; and, if it can be conveniently managed, the piece of work to be varnished should be made warm likewise: and for the same reason all dampness should be avoided; for either cold or moisture chills this kind of varnish, and prevents its taking proper hold of the substance on which it is laid.

When the work is so prepared, or by the priming with the composition of size and whiting above described, the proper japan ground must be laid on, which is much the best formed of shell-lac varnish, and the colour desired, if white be not in question, which demands a peculiar treatment, or great brightness be not required, when also other means must be pursued.

The colours used with the shell-lac varnish may be any pigments whatever which give the tint of the ground desired; and they may be mixed together to form browns or any compound colours.

As metals never require to be undercoated with whiting, they may be treated in the same manner as wood or leather, when the undercoat is omitted, except in the instances particularly spoken of below.

White JAPAN Grounds—The forming a ground perfectly white, and of the first degree of hardness, re-

Japan. mains hither a desideratum, or matter fought for, in the art of japanning, as there are no substances which form a very hard varnish but what have too much colour not to deprave the whiteness, when laid on of a due thickness over the work.

The nearest approach, however, to a perfect white varnish, already known, is made by the following composition.

"Take flake white, or white lead, washed over and ground up with a sixth of its weight of starch, and then dried; and temper it properly for spreading with the mastic varnish prepared as under the article VARNISH.

"Lay these on the body to be japanned, prepared either with or without the undercoat of whiting, in the manner as above ordered; and then varnish it over with five or six coats of the following varnish:

"Provide any quantity of the best seed-lac; and pick out of it all the clearest and whitest grains, reserving the more coloured and fouler parts for the coarse varnishes, such as that used for priming or preparing wood or leather. Take of this picked seed-lac two ounces, and of gum animi three ounces; and dissolve them, being previously reduced to a gross powder, in about a quart of spirit of wine; and strain off the clear varnish."

The seed-lac will yet give a slight tinge to this composition; but cannot be omitted where the varnish is wanted to be hard; though, when a softer will answer the end, the proportion may be diminished, and a little crude turpentine added to the gum animi to take off the brittleness.

A very good varnish, free entirely from all brittleness, may be formed by dissolving as much gum animi as the oil will take, in old nut or poppy oil; which must be made to boil gently when the gum is put into it. The ground of white colour itself may be laid on in this varnish, and then a coat or two of it may be put over the ground; but it must be well diluted with oil of turpentine when it is used. This, though free from brittleness, is nevertheless liable to suffer by being indented or bruised by any slight strokes; and it will not well bear any polish, but may be brought to a very smooth surface without, if it be judiciously managed in the laying it on. It is likewise somewhat tedious in drying, and will require some time where several coats are laid on; as the last ought not to contain much oil of turpentine.

Blue JAPAN Grounds.—Blue japan grounds may be formed of bright Prussian blue, or of verditer glazed over by Prussian blue, or of smalt. The colour may be best mixed with shell-lac varnish, and brought to a polishing state by five or six coats of varnish of seed-lac; but the varnish, nevertheless, will somewhat injure the colour by giving to a true blue a cast of green, and fouling in some degree a warm blue by the yellow it contains: where, therefore, a bright blue is required, and a less degree of hardness can be dispensed with, the method before directed in the case of white grounds must be pursued.

Red JAPAN Grounds.—For a scarlet japan ground, vermilion may be used; but the vermilion has a glaring effect, that renders it much less beautiful than the crimson produced by glazing it over with carmine or fine lake; or even with rose-pink, which has a very good

Japan. good effect used for this purpose. For a very bright crimson, nevertheless, instead of glazing with carmine, the Indian lake should be used, dissolved in the spirit of which the varnish is compounded, which it readily admits of when good: and, in this case, instead of glazing with the shell-lac varnish, the upper or polishing coats need only be used; as they will equally receive and convey the tinge of the Indian lake, which may be actually dissolved by spirit of wine: and this will be found a much cheaper method than the using carmine. If, nevertheless, the highest degree of brightness be required, the white varnishes must be used.

Yellow JAPAN Grounds.—For bright yellow grounds, the king's yellow, or the turpeth mineral, should be employed, either alone or mixed with fine Dutch pink: and the effect may be still more heightened by dissolving powdered turmeric-root in the spirit of wine of which the upper or polishing coat is made; which spirit of wine must be strained from off the dregs before the seed-lac be added to it to form the varnish.

The seed-lac varnish is not equally injurious here, and with greens, as in the case of other colours; because, being only tinged with a reddish yellow, it is little more than an addition to the force of the colours.

Yellow grounds may be likewise formed of the Dutch pink only; which, when good, will not be wanting in brightness, though extremely cheap.

Green JAPAN Grounds.—Green grounds may be produced by mixing the king's yellow and bright Prussian blue, or rather the turpeth mineral and Prussian blue; and a cheap, but fouler kind, by verdgris with a little of the abovementioned yellows, or Dutch pink. But where a very bright green is wanted, the crystals of verdgris, called *distilled verdgris*, should be employed; and to heighten the effect they should be laid on a ground of leaf-gold, which renders the colour extremely brilliant and pleasing.

They may any of them be used successfully with good seed-lac varnish, for the reason before given; but will be still brighter with white varnish.

Orange-coloured JAPAN Grounds.—Orange-coloured japan grounds may be formed by mixing vermilion or red-lead with king's yellow, or Dutch pink; or the orange-lac, which will make a brighter orange ground than can be produced by any mixture.

Purple JAPAN Grounds.—Purple japan grounds may be produced by the mixture of lake and Prussian blue; or a fouler kind, by vermilion and Prussian blue. They may be treated as the rest with respect to the varnish.

Black JAPAN Grounds to be produced without Heat.—Black grounds may be formed by either ivory-black or lamp-black: but the former is preferable where it is perfectly good.

These may be always laid on with shell-lac varnish; and have their upper or polishing coats of common seed-lac varnish, as the tinge or foulness of the varnish can be here no injury.

Common Black JAPAN Grounds on Iron or Copper, produced by means of Heat.—For forming the common black japan grounds by means of heat, the piece of work to be japanned must be painted over with drying oil; and, when it is of a moderate dryness, must be put into a stove of such degree of heat as will change the oil to black, without burning it so as to destroy or weaken its tenacity. The stove should not be too hot

when the work is put into it, nor the heat increased too fast; either of which errors would make it blister: but the slower the heat is augmented, and the longer it is continued, provided it be restrained within the due degree, the harder will be the coat of japan. This kind of varnish requires no polish, having received, when properly managed, a sufficient one from the heat.

The fine Tortoise-shell JAPAN Ground produced by means of Heat.—The best kind of tortoise-shell ground produced by heat is not less valuable for its great hardness, and enduring to be made hotter than boiling water without damage, than for its beautiful appearance. It is to be made by means of a varnish prepared in the following manner:

“Take of good linseed-oil one gallon, and of umbre half a pound: boil them together till the oil become very brown and thick: strain it then through a coarse cloth, and set it again to boil; in which state it must be continued till it acquire a pitchy consistence; when it will be fit for use.”

Having prepared thus the varnish, clean well the iron or copper plate or other pieces which is to be japanned; and then lay vermilion tempered with shell-lac varnish, or with drying-oil diluted with oil of turpentine, very thinly, on the places intended to imitate the more transparent parts of the tortoise-shell. When the vermilion is dry, brush over the whole with the black varnish, tempered to a due consistence with oil of turpentine; and when it is set and firm, put the work into a stove, where it may undergo a very strong heat, and must be continued a considerable time; if even three weeks or a month, it will be the better.

This was given amongst other receipts by Kunckel; but appears to have been neglected till it was revived with great success in the Birmingham manufactures, where it was not only the ground of snuff-boxes, dressing-boxes, and other such lesser pieces, but of those beautiful tea-waiters which have been so justly esteemed and admired in several parts of Europe where they have been sent. This ground may be decorated with painting and gilding, in the same manner as any other varnished surface, which had best be done after the ground has been duly hardened by the hot stove; but it is well to give a second annealing with a more gentle heat after it is finished.

Method of painting JAPAN Work.—Japan work ought properly to be painted with colours in varnish; though, in order for the greater dispatch, and, in some very nice works in small, for the freer use of the pencil, the colours are sometimes tempered in oil; which should previously have a fourth part of its weight of gum-animi dissolved in it; or, in default of that, of the gums sandarac or mastic. When the oil is thus used, it should be well diluted with spirit of turpentine, that the colours may be laid more evenly and thin; by which means, fewer of the polishing or upper coats of varnish become necessary.

In some instances, water-colours are laid on grounds of gold, in the manner of other paintings; and are best, when so used, in their proper appearance, without any varnish over them; and they are also sometimes so managed as to have the effect of embossed work. The colours employed in this way, for painting, are best

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Japan. prepared by means of isinglass size corrected with honey or sugar-candy. The body of which the embossed work is raised, need not, however, be tinged with the exterior colour; but may be best formed of very strong gum-water, thickened to a proper consistence by bole-armenian and whiting in equal parts; which being laid on the proper figure, and repaired when dry, may be then painted with the proper colours tempered in the isinglass size, or in the general manner with shell-lac varnish.

Manner of Varnishing JAPAN Work.—The last and finishing part of japanning lies in the laying on and polishing the outer coats of varnish; which are necessary, as well in the pieces that have only one simple ground of colour, as with those that are painted. This is in general best done with common seed-lac varnish, except in the instances and on those occasions where we have already shown other methods to be more expedient: and the same reasons which decide as to the fitness or impropriety of the varnishes, with respect to the colours of the ground, hold equally with regard to those of the painting: for where brightness is the most material point, and a tinge of yellow will injure it, seed-lac must give way to the whiter gums; but where hardness, and a greater tenacity, are most essential, it must be adhered to; and where both are so necessary, that it is proper one should give way to the other in a certain degree reciprocally, a mixed varnish must be adopted.

This mixed varnish, as we have already observed, should be made of the picked seed-lac. The common seed-lac varnish, which is the most useful preparation of the kind hitherto invented, may be thus made:

“Take of seed-lac three ounces, and put it into water to free it from the sticks and filth that are frequently intermixed with it; and which must be done by stirring it about, and then pouring off the water, and adding fresh quantities in order to repeat the operation, till it be freed from all impurities, as it very effectually may be by this means. Dry it then, and powder it grossly, and put it, with a pint of rectified spirit of wine, into a bottle, of which it will not fill above two-thirds. Shake the mixture well together; and place the bottle in a gentle heat, till the seed appear to be dissolved; the shaking being in the mean time repeated as often as may be convenient: and then pour off all that can be obtained clear by this method, and strain the remainder through a coarse cloth. The varnish thus prepared must be kept for use in a bottle well stoped.”

When the spirit of wine is very strong, it will dissolve a greater proportion of the seed lac: but this will saturate the common, which is seldom of a strength sufficient for making varnishes in perfection. As the chilling, which is the most inconvenient accident attending those of this kind, is prevented, or produced more frequently, according to the strength of the spirit; we shall therefore take this opportunity of showing a method by which weaker rectified spirits may with great ease at any time, be freed from the phlegm, and rendered of the first degree of strength.

“Take a pint of the common rectified spirit of wine, and put it into a bottle, of which it will not fill

above three parts. Add to it half an ounce of pearl-ashes, salt of tartar, or any other alkaline salt, heated red-hot, and powdered, as well as it can be without much loss of its heat. Shake the mixture frequently for the space of half an hour; before which time, a great part of the phlegm will be separated from the spirit, and will appear, together with the undissolved part of the salts, in the bottom of the bottle. Let the spirit then be poured off, or freed from the phlegm and salts, by means of a titorium or separating funnel; and let half an ounce of the pearl-ashes, heated and powdered as before, be added to it, and the same treatment repeated. This may be done a third time, if the quantity of phlegm separated by the addition of the pearl-ashes appear considerable. An ounce of alum reduced to powder and made hot, but not burnt, must then be put into the spirit, and suffered to remain some hours; the bottle being frequently shaken: after which, the spirit, being poured off from it, will be fit for use.”

The addition of the alum is necessary, to neutralize the remains of the alkaline salt or pearl-ashes; which would otherwise greatly deprave the spirit with respect to varnishes and laquer, where vegetable colours are concerned; and must consequently render another distillation necessary.

The manner of using the seed-lac or white varnishes is the same, except with regard to the substance used in polishing; which, where a pure white or great clearness of other colours is in question, should be itself white: whereas the browner sorts of polishing dust, as being cheaper, and doing their business with greater dispatch, may be used in other cases. The pieces of work to be varnished should be placed near a fire, or in a room where there is a stove, and made perfectly dry; and then the varnish may be rubbed over them by the proper brushes made for that purpose, beginning in the middle, and passing the brush to one end; and then with another stroke from the middle, passing it to the other. But no part should be crossed or twice passed over, in forming one coat, where it can possibly be avoided. When one coat is dry, another must be laid over it; and this must be continued at least five or six times, or more, if on trial there be not sufficient thickness of varnish to bear the polish, without laying bare the painting or the ground colour underneath.

When a sufficient number of coats is thus laid on, the work is fit to be polished: which must be done, in common cases, by rubbing it with a rag dipped in Tripoli or pumice-stone, commonly called *rotten stone*, finely powdered: but towards the end of the rubbing, a little oil of any kind should be used along with the powder; and when the work appears sufficiently bright and glossy, it should be well rubbed with the oil alone, to clean it from the powder, and give it a still brighter lustre.

In the case of white grounds, instead of the Tripoli or pumice-stone, fine putty or whiting must be used; both which should be washed over to prevent the danger of damaging the work from any sand or other gritty matter that may happen to be commixed with them.

It is a great improvement of all kinds of japan work, to harden the varnish by means of heat; which,

Japheth
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Jaquelot.

in every degree that it can be applied short of what would burn or calcine the matter, tends to give it a more firm and strong texture. Where metals form the body, therefore, a very hot stove may be used, and the pieces of work may be continued in it a considerable time; especially if the heat be gradually increased: but where wood is in question, heat must be sparingly used, as it would otherwise warp or shrink the body, so as to injure the general figure.

JAPHETH, the son of Noah. His descendants possessed all Europe and the isles in the Mediterranean, as well those which belong to Europe; as others which depend on Asia. They had all Asia Minor, and the northern parts of Asia above the sources of the Tigris and Euphrates. Nah, when he blessed Japheth, said to him, "God shall enlarge Japheth, and he shall dwell in the tents of Shem; and Canaan shall be his servant." This blessing of Noah was accomplished, when the Greeks, and after them the Romans, carried their conquests into Asia and Africa, where were the dwelling and dominions of Shem and Canaan.

The sons of Japheth were Gomer, Magog, Madai, Javan, Tubal, Meshech, and Tiras. The scripture says, "that they peopled the isles of the Gentiles, and settled in different countries, each according to his language, family, and people." It is supposed, that Gomer was the father of the Cimbri, or Cimmerians; Magog of the Scythians; Madai of the Macedonians or Medes; Javan of the Ionians and Greeks; Tubal of the Tibarenians; Meshech of the Muscovites or Russians; and Tiras of the Thracians. By the isles of the Gentiles, the Hebrews understand the isles of the Mediterranean, and all the countries separated by the sea from the continent of Palestine; whither also the Hebrews could go by sea only, as Spain, Gaul, Italy, Greece, Asia Minor.

Japheth was known by profane authors under the name of Japetus. The poets make him the father of heaven and earth. The Greeks believe that he was the father of their race, and acknowledged nothing more ancient than him. Besides the seven sons of Japheth above mentioned, the Septuagint, Eusebius, the Alexandrian Chronicle, and St Austin, give him an eighth called Eliza, who is not mentioned either in the Hebrew or Chaldee, and the eastern people affirm that Japheth had eleven children.

JAPYDIA (anc. geog.), a western district of Illyricum anciently threefold; the first *Japydia* extending from the springs of the Timavus to Istria; the second, from the river Arsia to the river Tedanius; and the third, called *Inalpina*, situated in mount Albius and the other Alps, which run out above Istria. *Japodes*, or *Jopydes*, the people. Now constituting the south part of Carniola, and the west of Austrian Croatia.

JAPYGIA, CALABRIA, anciently so called by the Greeks. *Japyges*, the people.

JAPYGIUM (anc. geog.), a promontory of Calabria; called also *Salentinum*. Now *Capo di S. Maria di Leuca*.

JAQUELOT (Isaac), a celebrated French Protestant divine. born in 1647, at Vassy in Champagne, where his father was minister. The revocation of the edict of Nantz obliging him to quit France, he took refuge first at Heidelberg, and then at the Hague, where he procured an appointment in the Walloon church. Here he continued till that capital was taken

by the king of Prussia, who, hearing him preach, made him his French minister in ordinary at Berlin; to which city he removed in 1702. While he lived at Berlin, he entered into a warm controversy with M. Bayle on the doctrine advanced in his dictionary favouring manichæism, which continued until death imposed silence on both parties: and it was in this dispute that M. Jaquelot openly declared in favour of the Remonstrants. He wrote, among other works, 1. *Dissertations sur l'existence de Dieu*. 2. *Dissertations sur le Messie*. 3. *Lettres à Messieurs les Prelats de l'Eglise Gallicane*. He was employed in finishing an important work upon the divine authority of the holy scriptures, when he died suddenly in 1708, aged 61.

JAR, or JARR, an earthen pot or pitcher, with a big belly and two handles.—The word comes from the Spanish *jarra* or *jarro*, which signify the same.

JAR is used for a sort of measure or fixed quantity of divers things.—The *jar* of oil is from 18 to 26 gallons; the *jar* of green ginger is about 100 pounds weight.

JARCHI (Solomon), otherwise *Raschi* and *Isaaki Solomon*, a famous rabbi, born at Troyes in Champagne, who flourished in the 12th century. He was a perfect master of the talmud and gemara; and he filled the postils of the bible with so many talmudical reveries, as totally extinguished both the literal and moral sense of it. A great part of his commentaries are printed in Hebrew, and some have been translated into Latin by the Christians. They are all greatly esteemed by the Jews, who have bestowed on the author the title of *prince of commentators*.

JARDYN, or JARDIN, (Karel du), painter of conversations, landscapes, &c. was born at Amsterdam in 1640, and became a disciple of Nicholas Berchem. He travelled to Italy whilst he was yet a young man; and arriving at Rome, he gave himself up alternately to study and dissipation. Yet, amidst this irregularity of conduct, his proficiency in the art was surprising; and his paintings rose into such high repute, that they were exceedingly coveted in Rome, and bought up at great prices. With an intention to visit his native city he at last left Rome; but passing through Lyons, and meeting some agreeable companions, they prevailed on him to stay there for some time, and he found as much employment in that city as he could possibly undertake or execute. But the profits which arose from his paintings were not proportionable to his profusion; and in order to extricate himself from the encumbrances in which his extravagance had involved him, he was induced to marry his hostess, who was old and disagreeable, but very rich. Mortified and ashamed of that adventure, he returned as expeditiously as possible to Amsterdam, accompanied by his wife, and there for some time followed his profession with full as much success as he had met with in Italy or Lyons. He returned to Rome the second time; and after a year or two spent there in his usual extravagant manner, he settled at Venice. In that city his merit was well known before his arrival, which procured him a very honourable reception. He lived there highly caressed, and continually employed; but died at the age of 38. He was sumptuously interred, out of respect to his talents; and although a Protestant, permitted to be laid in consecrated ground. This painter, in his colouring and touch, resembled his master Berchem:

Jar
||
Jardyn.

Jargon
Jasher.

chem: but he added to that manner a force which distinguishes the great masters of Italy; and it is observed. that most of his pictures seem to express the warmth of the sun, and the light of mid day. His pictures are not much encumbered; a few figures, some animals, and a little landscape for the back grounds, generally comprise the whole of his composition. However, some of his subjects are often more extensive, containing more objects, and a larger design. His works are as much sought after, as they are difficult to be met with.

JARGON, a kind of precious stone, of the nature of the diamond, but softer; found in Brasil according to M. de Bomare; but in Ceylon, according to M. Rome de L'Isle. Its specific gravity is nearly equal to that of the ponderous spar, being 4.16. Its crystals consist of two tetrahedral pyramids of equal sides, separated by a short prism; so that the jargon is properly of a dodecahedral form. According to some lapidaries, the jargon comes nearest to the sapphire in hardness; and as they have when cut and polished a great resemblance to the diamond, they are also called by some *soft diamonds*; and one may be easily imposed upon in purchasing these for the true kind, when they are made up in any sort of jewellery work. On exposing this stone to a violent fire, M. D'Arcot found the surface a little vitrified where it stuck to the porcelain test in which it was set; whence it appears, that the jargon has not the least resemblance to the diamond, which is destructible by fire. See **DIAMOND**.

JARIMUTH, **JARMUTH**, or *Jerimoth*, Josh. xv. a town reckoned to the tribe of Judah, four miles from Eleutheropolis, westward, (Jerome). Thought to be the same with Ramoth and Remeth, Joshua xix. and Nehem. x. 2. (Reland).

JARNAC, a town of France, in Orleanois and in Angumois, remarkable for a victory gained by Henry III. over the Huguenots in 1569. It is seated on the river Charente, in W. Long. o. 13. N. Lat. 45. 40.

JAROSLOW, a handsome town of Poland, in the palatinate of Russia, with a strong citadel. It is remarkable for its great fair, its handsome buildings, and a battle gained by the Swedes in 1656, after which they took the town. It is seated on the river Saine, in E. Long. 22. 23. N. Lat. 49. 58.

JASHER (The book of). This is a book which Joshua mentions, and refers to in the following passage: "And the sun stood still, and the moon stayed, until the people had avenged themselves upon their enemies: is not this written in the book of Jasher?"

It is difficult to determine what this *book of Jasher*, or "the upright," is. St Jerom and the Jews believed it to be Genesis, or some other book of the Pentateuch, wherein God foretold he would do wonderful things in favour of his people. Huetius supposes it was a book of morality, in which it was said that God would subvert the course of nature in favour of those who put their trust in him. Others pretend, it was public annals, or records, which were styled *justice* or *upright*, because they contained a faithful account of the history of the Israelites. Grotius believes, that this book was nothing else but a song, made to celebrate this miracle and this victory. This seems the more probable opinion, because the

words cited by Joshua as taken from this work, "Sun, stand thou still upon Gibeon, and thou moon in the valley of Ajalon," are such poetical expressions as do not suit with historical memoirs; besides that in the 2d book of Samuel (i. 18.) mention is made of a book under the same title, on account of a song made on the death of Saul and Jonathan.

JASIONE, in botany: A genus of the monogamia order, belonging to the syngenesia class of plants; and in the natural method ranking under the 29th order, *Campanaceæ*. The common calyx is ten-leaved; and the corolla has five regular petals; the capsule beneath, two celled.

JASMINE. See **JASMINUM**.

Arabian JASMINE. See **NYCTANTHES**.

JASMINUM, **JASMINE**, or *Jessamine-tree*, in botany: A genus of the monogynia order, belonging to the diandria class of plants; and in the natural method ranking under the 44th order, *Sepiariæ*. The corolla is quinquefid, the berry dicoccous; the seeds arillated, the antheræ within the tube.

Species. 1. The officinalis, or common white jasmine, hath shrubby long slender stalks and branches, rising upon support 15 or 20 feet high, with numerous white flowers from the joints and ends, of a very fragrant odour. There is a variety with white-striped, and another with yellow-striped leaves. 2. The fruticans, or shrubby yellow jasmine, hath shrubby, angular, trailing stalks and branches, rising upon support eight or ten feet high; trifoliate and simple alternate leaves; with yellow flowers from the sides and ends of the branches, appearing in June; frequently producing berries of a black colour. This species is remarkable for sending up many suckers from its roots; often so plentifully as to overspread the ground, if not taken up annually. 3. The humilis, or dwarf yellow jasmine, hath shrubby firm stalks, and angular branches, of low, somewhat robust and bushy growth; broad, trifoliate, and pinnated leaves; and large yellow flowers in July, sometimes succeeded by berries. 4. The grandiflorum, or great-flowered Catalonian jasmine, hath a shrubby firm upright stem, branching out into a spreading head from about three to six or eight feet high, with large flowers of a bluish-red colour without, and white within, appearing from July to November. Of this there is a variety with semi-double flowers, having two series of petals. 5. The azoricum, or azorian white jasmine, hath shrubby, long slender stalks and branches, rising upon support 15 or 20 feet high, with pretty large flowers of a pure white colour; coming out in loose bunches from the ends of the branches, and appearing most part of the summer and autumn. 6. The odoratissimum, or most sweet-scented yellow Indian jasmine, hath a shrubby upright stalk branching erect, without support, six or eight feet high, with bright yellow flowers in bunches from the ends of the branches; flowering from July till October, and emitting a most fragrant odour.

Culture. The three first species are sufficiently hardy to thrive in this climate without any shelter. They may be easily propagated by layers and cuttings; and the striped varieties by grafting or budding on stocks of the common kind.—The other three species, which are tender, may also be increased by layers, or

Jafon
Jal. cr.

seeds, or by grafting and budding them upon the common white and shrubby yellow jasmine. They require shelter in a green house in winter, and therefore must always be kept in pots to move them out and in occasionally. The pots must be filled with light, rich earth, frequently watered in summer, and about once a week in winter, but always moderately during that season. Prune off all the decayed wood at any time when it appears, and shorten or retrench the rambling shoots as you see occasion, to preserve the heads somewhat regular; managing them in other respects as the common green-house plants.

JASON, the Greek hero who undertook the Argonautic expedition, the history of which is obscured by fabulous traditions, flourished about 937 B. C. See ARGONAUTS.

JASPACHATES. See JADE-STONE.

JASPER. in natural history, a genus of stones belonging to the siliceous class. According to Cronstedt, all the opaque flints are called by this name whose texture resembles dry clay, and which cannot be any other way distinguished from flints, except that they are more easily melted; which perhaps may also proceed from a mixture of iron. The species are,

1. Pure jasper; which, Cronstedt informs us, cannot be decomposed by any means hitherto known; tho' Mr Kirwan says that it contains 75 per cent. of silex; 20 of argil, and about five of calx of iron. The specific gravity is from 2680 to 2778. It is found of different colours; viz. green with red dots from Egypt, called also the *heliotrope*, or *blood-stone*; quite green from Bohemia; red from Italy, called there *diaspro rosso*, or yellow, called *melites* by the ancients; a name, according to Pliny, of the same import with *male coloris*. It is also found red with yellow spots and veins, in Sicily, Spain, and near Constantinople, called by the Italians *diaspro florido*; or black from some places in Sweden, called by the Italians *paragone antico*.

2. *Jaspis martialis*, or *sinople*, containing iron. This is a dark red stone containing 18 or 20 per cent. of metal. Near Chemnitz, where it forms very considerable veins, as Bruunnich informs us, it has frequently specks of marcasite, cubic lead ores, and blend. It has likewise so much gold as to be worth working: there is likewise a striped sinople of various colours. There are several varieties differing in the coarseness and fineness of their texture, as well as the shade of their colour; varying from a deep brown to a yellow. The last is attracted by the magnet after calcination.

Cronstedt observes that jasper, when fresh broken, so nearly resembles a bole of the same colour, that it can only be distinguished by its hardness. In the province of Dalarne in Sweden, it is found in a kind of hard sand-stone; in other places it is found within such unctuous clefts as are usually met with in Colnish clay, red chalk, and other substances of that kind. There are likewise some jaspers that imbibe water; from whence, and other considerations, our author is of opinion that they have clay for their basis, notwithstanding their hardness. According to Magellan, it resists the blow-pipe *per se*, and is only partially soluble with the mineral alkali; separating into small particles with effervescence: with borax or microcosmic salt it melts without any effervescence. Bergman, in his *Sciagraphia*, informs us, that it is composed of siliceous earth united to a

clay very full of iron. The mineral acids have no effect upon it in a short time, but corrode it by some months immersion. On treating a small piece of green jasper with vitriolic acid, some crystals of alum and green vitriol were obtained; which shows that iron and clay are ingredients in its composition. M. Daubenton mentions 15 varieties of this substance. 1. Green, from Bohemia, Silesia, Siberia, and the shores of the Caspian sea; which seems to be the *pavonium* of Aldrovandus. 2. The *diaspro rosso*, or red jasper; less common, and in smaller masses, than the green. 3. Yellow from Freyberg and Rochtlitz; sometimes of a citron colour, and appearing as if composed of silky filaments; commonly called the *silk jasper*. 4. Brown from Dalecarlia in Finland and Sweden. 5. The violet from Siberia. 6. The black from Sweden, Saxony, and Finland. 7. The bluish-grey, a very rare species. 8. The milky white mentioned by Pliny, and found in Dalecarlia. 9. The variegated with green, red, and yellow clouds. 10. The blood stone, green with red specks, from Egypt, which was supposed to stop the blood. 11. The veined with various colours. Sometimes these veins have a distant resemblance to various letters, and then the jasper is named by the French *jaspé grammatique*. Some of these found near Rochelle in France, on account of their curious variety in this respect, are named *polygrammatiques*. 12. The jasper with various coloured zones. 13. That called *florido* by the Italians; which has various colours mixed promiscuously without any order. 14. When the jasper has many colours together, it is then (very improperly) called *universal*. 15. When it contains some particles of agate, it is then called *agatefied* jasper.

JASPONYX, in natural history, the purest horn-coloured onyx, with beautiful green zones, which are composed of the genuine matter of the finest jaspers. See JASPER and ONYX.

JATROPHA, the CASSADA PLANT: A genus of the monodelphia order, belonging to the monœcia class of plants; and in the natural method ranking under the 38th order, *Tricocca*. There is no male calyx; the corolla is monopetalous, and funnel-shaped; there are ten stamina, one alternately longer than the other. There is no female calyx; the corolla is pentapetalous, and patent; there are three bifid styles; the capsule is trilocular, with one seed in each cell. There are nine

Species. Of these the most remarkable are the following: 1. The curcas, or English physic-nut, with leaves cordate and angular, is a knotty shrub growing about 10 or 12 feet high. The extremities of the branches are covered with leaves; and the flowers, which are of a green herbaceous kind, are set on in an umbel fashion round the extremities of the branches, but especially the main stalks. These are succeeded by as many nuts, whose outward tegument is green and husky; which being peeled off, discovers the nut, whose shell is black, and easily cracked: This contains an almond-like kernel, divided into two parts; between which separation lie two milkwhite thin membranaceous leaves, easily separable from each other. These have not only a bare resemblance of perfect leaves, but have, in particular, every part, the stalk, the middle rib, and transverse ones, as visible as any leaf whatsoever. 2. The *gossypifolia*, cotton-leaved jatropa or belly-ach bush, the leaves of which are quinquepartite, with lobes

Jasponyx,
Jatropha.

ovate

Jatropha. ovate and entire, and glandular branchy bristles. The stem, which is covered with a light greyish bark, grows to about three or four feet high, soon dividing into several wide extended branches. These are neither decorated with leaves nor flowers till near the top, which is then surrounded by the former: Their footstalks, as well as the young buds on the extremity of the branches, are guarded round with stiff hairy bristles, which are always tipped with glutinous liquid drops. From among these rise several small deep-red pentapetalous flowers, the pistil of each being thick set at the top with yellow farinaceous dust which blows off when ripe: these flowers are succeeded by hexagonal husky blackish berries, which when ripe open by the heat of the sun, emitting a great many small dark coloured seeds, which serve as food for ground-doves. The leaves are few; but seldom or never drop off, nor are eaten by vermin of any kind. 3. The multifida, or French physic-nut, with leaves many parted and polished, and stipules bristly and multifid, grows to be ten feet high. The main stalk divides into very few branches, and is covered with a greyish white bark. The leaves stand upon six-inch footstalks, surrounding the main stalk, generally near the top, in an irregular order. The flowers grow in bunches, umbel fashion, upon the extremities of each large stalk, very much resembling, at their first appearance, a bunch of red coral: these afterwards open into small five-leaved purple flowers, and are succeeded by nuts, which resemble those of the first species. 4. The manihot, or bitter cassada, has palmated leaves; the lobes lanceolate, very entire, and polished. 5. The janipha, or sweet cassada, has palmated leaves, with lobes very entire; the intermediate leaves lobed with a sinus on both sides. 6. The elastica, with ternate leaves, elliptic, very entire, hoary underneath, and longly petioled. See figures of the two last on Plates CCXLVIII. and CCXLIX. which renders a more particular description unnecessary.

Properties, &c. The first species, a native of the West Indies, is planted round negro gardens. A decoction of the leaves of it, and of the second species (which grows wild), Dr Wright informs us, is often used with advantage in spasmodic belly-ach. attended with vomiting: it sits easier on the stomach than any thing else, and seldom fails to bring about a discharge by stool. The third species, a native of the same countries, is cultivated there as an ornamental shrub. The seeds of all the three are drastic purgatives and emetics; and they yield, by decoction, an oil of the same uses and virtues as the oleum ricini. See RICINUS.

The 4th and 5th species, the janipha and manihot, are natives of Africa and the West Indies, where they are cultivated as articles of food. It is difficult, Dr Wright says, to distinguish the bitter from the sweet cassada by the roots: but it will be best to avoid those of the cassada that bears flowers, as it is the bitter, which is poisonous when raw.

The root of bitter cassada has no fibrous or woody filaments in the heart, and neither boils nor roasts soft. The sweet cassada has all the opposite qualities. The bitter, however, may be deprived of its noxious qualities (which reside in the juice) by heat. Cassada bread, therefore, is made of both the bitter and sweet, thus:—The roots are washed and scraped clean; then

grated into a tub or trough: after this they are put into a hair bag, and strongly pressed with a view to squeeze out the juice, and the meal or farina is dried in a hot stone-bason over the fire: it is then made into cakes. It also makes excellent puddings, equal to millet.—The scrapings of fresh bitter cassada are successfully applied to ill-disposed ulcers.—Cassada roots yield a great quantity of starch, which the Brazilians export in little lumps under the name of *tapioca*. According to Father Labat, the small bits of manioc which have escaped the grater, and the clods which have not passed the sieve, are not useless. They are dried in the stove after the flour is roasted, and then pounded in a mortar to a fine white powder, with which they make soup. It is likewise used for making a kind of thick coarse cassada, which is roasted till almost burnt; of this, fermented with molasses and West-India potatoes, they prepare a much esteemed drink or beverage called *ouycou*. This liquor, the favourite drink of the natives, is sometimes made extremely strong, especially on any great occasion, as a feast: with this they get intoxicated, and, remembering their old quarrels, massacre and murder each other. Such of the inhabitants and workmen as have not wine, drink *ouycou*. It is of a red-colour, strong, nourishing, refreshing, and easily inebriates the inhabitants, who soon accustom themselves to it as easily as beer.

The 6th species is the *Hevea Guianensis* of Aublet†, † *Histoire or tree which yields the elastic resin called caoutchouc des Plantes* or *India rubber*; for a particular account of which, see *de la Guiane François*, P. 87. the article CAOUTCHOUC. Our figure is copied from Aublet's tab. 335. and not from the erroneous plate given in the *Atia Parisiana*.

JAVA, a large island of the East Indies, lying between 105° and 116° E. Long. and from 6° to 8° S. Lat. extending in length 700 miles, and in breadth about 100. It is situated to the south of Borneo, and south east from the peninsula of Malacca, having Sumatra lying before it, from which it is separated by a narrow passage, now so famous in the world by the name of the *Straits of Sunda*. The country is mountainous and woody in the middle; but a flat coast, full of bogs and marshes, renders the air unhealthful. It produces pepper, indigo, sugar, tobacco, rice, coffee, cocoa-nuts, plantains, cardamoms, and other tropical fruits. Gold also, but in no great quantities, hath been found in it. It is diversified by many mountains, woods, and rivers; in all which nature has very bountifully bestowed her treasures. The mountains are many of them so high as to be seen at the distance of three or four leagues. That which is called the *Blue Mountain* is by far the highest of them all, and seen the farthest off at sea. They have frequent and very terrible earthquakes in this island, which shake the city of Batavia and places adjacent, to such a degree, that the fall of the houses is expected every moment. The waters in the road are excessively agitated, inasmuch that their motion resembles that of a boiling pot; and in some places the earth opens, which affords a strange and terrible spectacle. The inhabitants are of opinion, that these earthquakes proceed from the mountain Parang, which is full of sulphur, saltpetre, and bitumen. The fruits and plants of this island are all in their several kinds excellent, and almost out of number. There are abundance of forests scattered over it, in which are all kinds of wild beasts, such as buffaloes, tygers,

Java.

Java

tygers, rhinoceroses, and wild horses, with an infinite variety of serpents, some of them of an enormous size: Crocodiles are prodigiously large in Java, and are found chiefly about the mouths of rivers; for, being amphibious animals, they delight mostly in marshes and savannahs. This creature, like the tortoise, lays its eggs in the hot sands, without taking any further care of them; and the sun hatches them at the proper season, when they run instantly into the water. There is, in short, no kind of animal wanting here: fowls they have of all sorts, and exquisitely good, especially peacocks, partridges, pheasants, wood-pigeons: and, for curiosity, they have the Indian bat, which differs little in form from ours; but its wings, when extended, measure a full yard, and the body of it is of the size of a rat. They have fish in great plenty, and very good; so that for the value of three pence there may be enough bought to dine six or seven men. They have likewise a multitude of tortoises, the flesh of which is very little inferior to veal, and there are many who think it better.

It is said, that there are in the island upwards of 40 great towns, which, from the number of their inhabitants, would, in any other part of the world, merit the title of *cities*; and more than 4500 villages, besides hamlets, and straggling houses, lying very near each other, upon the sea-coast, and in the neighbourhood of great towns: hence, upon a fair and moderate computation, there are within the bounds of the whole island, taking in persons of both sexes, and of all ranks and ages, more than thirty millions of souls; so that it is thrice as populous as France, which, though twice as big, is not computed to have more than twenty millions of inhabitants.

There are a great many princes in the island, of which the most considerable are, the emperor of Materan, who resides at Katsura, and the kings of Bantam and Japara. Upon the first of these many of the petty princes are dependant; but the Dutch are absolute masters of the greatest part of the island, particularly of the north coast, though there are some of the princes beyond the mountains, on the south coast, who still maintain their independency. The natives of the country, who are established in the neighbourhood of Batavia, and for a tract of about 40 leagues along the mountains of the country of Bantam, are immediately subject to the governor-general. The company send drossards, or commissaries, among them, who administer justice and take care of the public revenues.

The city of Batavia is the capital not only of this island but of all the Dutch dominions in India. It is an exceeding fine city, situated in the latitude of 6° south, at the mouth of the river Jucatra, and in the bosom of a large commodious bay, which may be considered not only as one of the safest harbours in India, but in the world. The city is surrounded by a rampart 21 feet thick, covered on the outside with stone and fortified with 22 bastions. This rampart is environed by a ditch 45 yards over, and full of water, especially when the tides are high, in the spring. The avenues to the town are defended by several forts, each of which is well furnished with excellent brass cannon: no person is suffered to go beyond these forts without a passport. The river Jucatra passes through

N° 162.

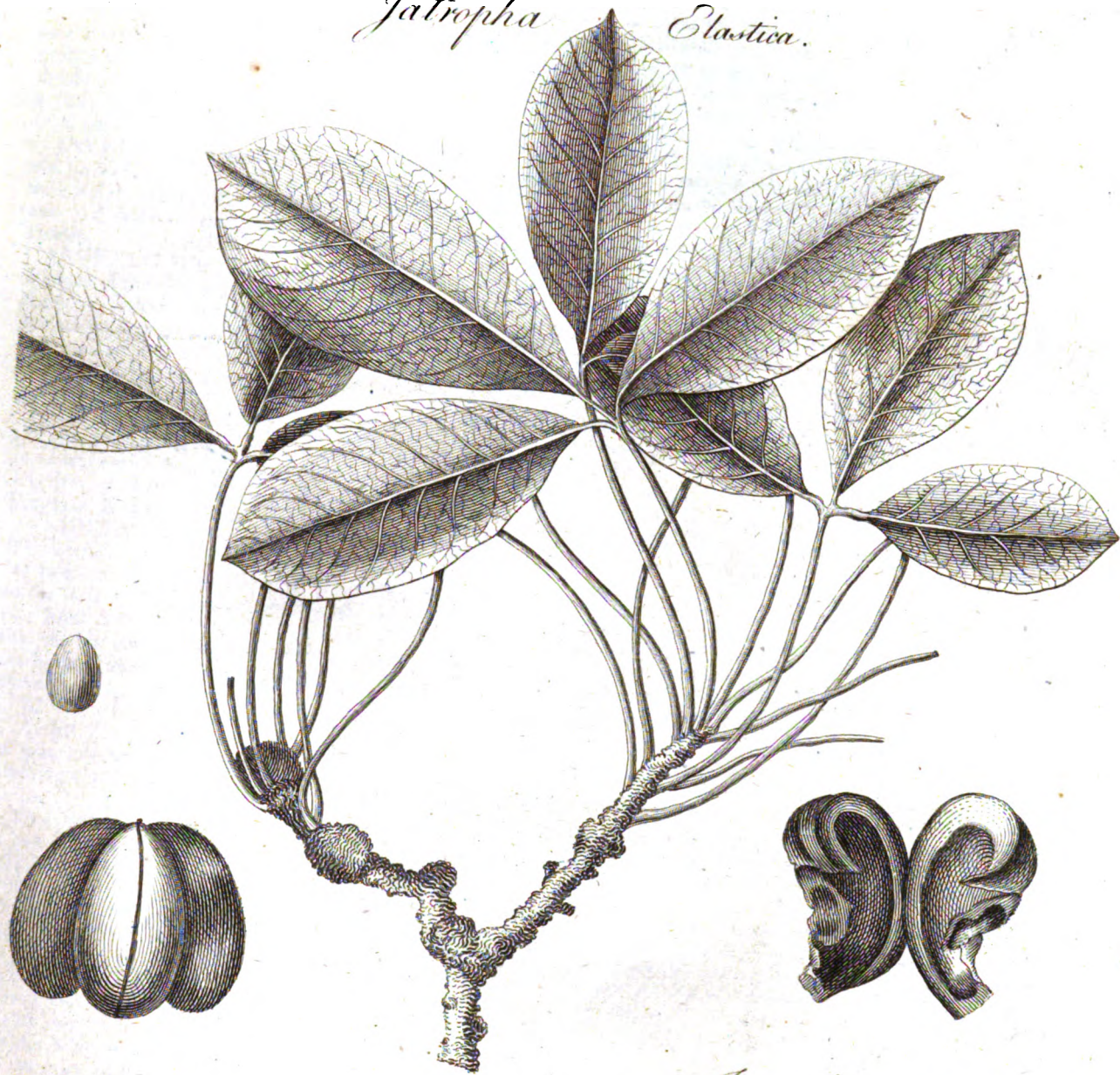
the midst of the town, and forms 15 canals of running water, all faced with free-stone, and adorned with trees that are ever green: over these canals are 56 bridges, besides those which lie without the town. The streets are all perfectly straight, and each, generally speaking, 30 feet broad. The houses are built of stone, after the manner of those in Holland. The city is about a league and a half in circumference, and has five gates; but there are ten times the number of houses without that there are within it. There is a very fine town-house, four Calvinist churches, besides other places of worship for all sorts of religions, a spin-huy or house of correction, an orphan-house, a magazine of sea-stores, several for spices, with wharfs and cord-manufactures, and many other public buildings. The garrison consists commonly of between 2000 and 3000 men. Besides the forts mentioned above, there is the citadel of Batavia, a very fine regular fortification, situated at the mouth of the river, and flanked with four bastions; two of which command the sea, and the other two the town. It is in this citadel that the governor general of the Indies has his palace; over-against which is that of the director-general, who is the next person to the governor. The counsellors, and other principle officers of the company, have also their apartments there; as have likewise the physician, the surgeon, and the apothecary. There are in it, besides, arsenals and magazines furnished with ammunition for many years. The city of Batavia is not only inhabited by Dutch, French, Portuguese, and other Europeans, established here on account of trade; but also by a vast number of Indians of different nations, Javanese, Chinese, Malaysians, Negroes, Amboynese, Armenians, natives of the isle of Bali, Mardykens or Topasses, Macassers, Timors, Bougis, &c. Of the Chinese, there are, it is said, about 100,000 in the island; of which near 30,000 resided in the city till the year 1740, when the Dutch, pretending that they were in a plot against them, sent a body of troops into their quarter, and demanded their arms, which the Chinese readily delivered up; and the next day the governor sent another body, with orders to murder and massacre every one of the Chinese, men, women, and children. Some relate there were 20,000, others 30,000, that were put to death, without any manner of trial: and yet the barbarous governor, who was the instrument of this cruel proceeding, had the assurance to embark for Europe, imagining he had amassed wealth enough to secure him against any prosecution in Holland: but the Dutch, finding themselves detested and abhorred by all mankind for this piece of tyranny, endeavoured to throw the odium of it upon the governor, though he had the hands of all the council of Batavia, except one, to the order for the massacre. The states, therefore, dispatched a packet to the Cape of Good Hope, containing orders to apprehend the governor, and send him back to Batavia to be tried. He was accordingly apprehended at the Cape; but has never been heard of since. It is supposed he was thrown over-board in his passage to Batavia, that there might be no farther inquiries into the matter; and it is said, all the wealth this merciful gentleman had amassed, and sent over before him in four ships, was cast away in the passage.

Java.

Besides

Plate CCXLIX.

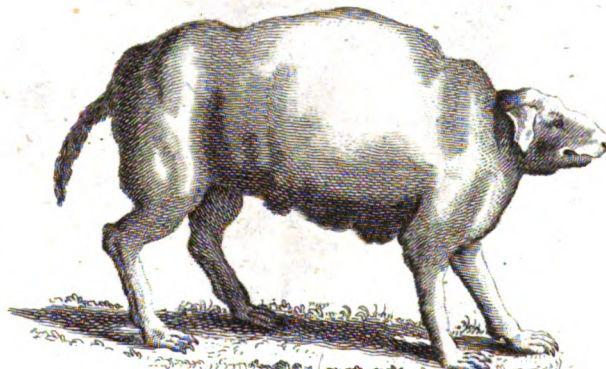
Jatropha  *Elastica.*



Hystrix dorsata.



Itzecuintepotzotli.



Javelin
||
Jazer.

Iberia
||
Ibycus.

Besides the garrison here, the Dutch, it is said have about 15,000 men in the island, either Dutch, or formed out of the several nations they have enslaved; and they have a fleet of between 20 and 30 men of war, with which they give law to every power on the coast of Asia and Africa, and to all the European powers that visit the Indian Ocean, unless we should now except the British: it was, however, but a little before the revolution that they expelled us from our settlement at Bantam.

JAVELIN, in antiquity, a sort of spear five feet and an half long; the shaft of which was of wood, with a steel point.—Every soldier in the Roman armies had seven of these, which were very light and slender.

JAVELLO (Chrysofome), a learned Italian Dominican of the 16th century, taught philosophy and theology at Bologna, and died about the year 1540. He wrote a work on philosophy, another on politics, and another on Christian œconomy, which are esteemed; with notes on Pomponatius, and other works, printed in 3 vols folio.

JAWER, a city of Silesia, capital of a province of the same name, with a citadel, and a large square surrounded with piazzas. It is 12 miles south-east of Lignitz, 30 south-west of Breslau, and 87 east of Prague. E. Long. 16 29. N. Lat. 50. 56.

JAUNDICE (derived from the French *jaunisse* "yellowness," of *jaune* "yellow"); a disease consisting in a suffusion of the bile, and a rejection thereof to the surface of the body, whereby the whole exterior habit is discoloured. Dr Maclurg is of opinion, that the bile returns into the circulation in this disorder by the course of the lymphatics. See MEDICINE-Index.

JAWS. See MAXILLÆ.

Locked jaw, is a spasmodic contraction of the lower jaw, commonly produced by some external injury affecting the tendons or ligaments. See MEDICINE-Index.

JAY, in ornithology. See CORVUS.

JAY (Guy Michael le), a French gentleman, who distinguished himself by causing a polyglot bible to be printed at his own expence in 10 vols folio: but he ruined himself by that impression; first because he would not suffer it to appear under the name of cardinal Richelieu, who, after the example of cardinal Ximenes, was ambitious of eternizing his name by this means; and next, because he made it too dear for the English market; on which Dr Walton undertook his polyglot bible, which, being more commodious, reduced the price of M. le Jay's. After the death of his wife, M. le Jay took orders, was made dean of Vezelay in the Nivernois, and Louis XIV. gave him the post of counsellor of state.

JAZER, or JASER (anc. geog.), a Levitical city in the territory of the Amorrites beyond Jordan, 10 miles to the west, or rather south-west, of Philadelphia, and 15 miles from Eschbon; and therefore situated between Philadelphia and Heshbon, on the east border of the tribe of Gad, supposed to be the *Jazorem* of Josephus. In Jeremiah xlviii. mention is made of the sea of Jazer, that is a lake; taken either for an effusion or overflowing of the Arnon, or a lake through which it passes, or from which it takes its rise.

VOL. IX. Part I.

IBERIA (SPAIN), so called by the ancients from the river Iberus. *Iberes* the people, from the nominative *Iber*. See HISPANIA.

Iberia was also the name of an inland country of Asia, having Colchis to the west, with a part of Pontus; to the north mount Caucasus; on the east Albania; and on the south Armenia Magna: Now the western part of Georgia (see GEORGIA). Iberia, according to Josephus, was first peopled by Tubal, the brother of Gomer and Magog. His opinion is confirmed by the Septuagint; for Meshech and Tubal are by these interpreters rendered *Moschi* and *Iberians*. We know little of the history of the country till the reign of Mithridates, when their king, named *Axtocis*, siding with that prince against Lucullus, and afterwards against Pompey, was defeated by the latter with great slaughter; but afterwards obtained a peace, upon delivering up his sons as hostages. Little notice is taken of the succeeding kings by the ancient historians. They were probably tributary to the Romans till that empire was overturned, when this, with the other countries in Asia bordering on it, fell successively under the power of the Saracens and Turks.

IBERIS, *SCIATICA CRESSÆ*, or *Candy-tuft*: A genus of the filiquosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order, *Silquose*. The corolla is irregular; the two exterior petals larger than the interior ones; the filicula polyspermous, emarginated.

Species. 1. The umbellata, or common candy-tuft, hath herbaceous, short, round, and very branchy stalks of tufty growth, from about six to eight or ten inches high; small spear-shaped leaves, the lower ones serrated, the upper entire; and all the stalks and branches terminated by umbellate clusters of flowers of different colours in the varieties. 2. The amara, or bitter candy-tuft, hath stalks branching like the former, which rise from eight to ten or twelve inches high; small, spear-shaped, and slightly indented leaves; and all the branches terminated by racemose bunches of white flowers in June and July. 3. The sempervirens, commonly called *tree candy-tuft*, hath low undershrubby stalks, very branchy and bushy, rising to the height of 10 or 12 inches, with white flowers in umbels at the ends of the branches, appearing great part of the summer. 4. The semperflorens, or ever-flowering shrubby iberis, hath low undershrubby stalks very branchy, growing to the height of 18 inches, with white flowers in umbels at the ends of the branches, appearing at all times of the year.

Culture. The two first kinds, being hardy annuals, may be sowed in any common soil in the month of March, or from that time till midsummer, and will thus afford a succession of flowers from June to September, which are succeeded by great plenty of seeds. The other two are somewhat tender; and therefore must be planted in pots, in order to be sheltered from the winter-frosts. They are easily propagated by slips or cuttings.

IBEX, in zoology. See CAPRA.

IBIS, in ornithology. See TANTALUS.

IBYCUS, a Greek lyric poet, of whose works there are only a few fragments remaining, flourished 550 B. C. It is said, that he was assassinated by robbers; and that, when dying, he called upon some

L

cranes

Ice.

cranes he saw flying to bear witness. Some time after, one of the murderers seeing some cranes, said to his companions, "There are the witnesses of Ibycus's death:" which being reported to the magistrates, the assassins were put to the torture, and having confessed the fact, were hanged. Thence arose the proverb *Ibyci Grues*.

ICE, in physiology, a solid, transparent, and brittle body, formed of some fluid, particularly water, by means of cold. See FROST.

The younger Lemery observes, that ice is only a re-establishment of the parts of water in their natural state; that the mere absence of fire is sufficient to account for this re-establishment; and that the fluidity of water is a real fusion, like that of metals exposed to the fire; differing only in this, that a greater quantity of fire is necessary to the one than the other. Galileo was the first that observed ice to be lighter than the water which composed it: and hence it happens, that ice floats upon water, its specific gravity being to that of water as eight to nine. This rarefaction of ice seems to be owing to the air-bubbles produced in water by freezing; and which, being considerably large in proportion to the water frozen, render the body so much specifically lighter: these air bubbles, during their production, acquire a great expansive power, so as to burst the containing vessels, though ever so strong. See CONGELATION, COLD.

M. Mairan, in a dissertation on ice, attributes the increase of its bulk chiefly to a different arrangement of the parts of the water from which it is formed; the icy skin on the water being composed of filaments which, according to him, are found to be constantly and regularly joined at an angle of 60° ; and which, by this angular disposition, occupy a greater volume than if they were parallel. He found the augmentation of the volume of water by freezing, in different trials, a 14th, an 18th, a 19th, and when the water was previously purged of air, only a 22d part: that ice, even after its formation, continues to expand by cold; for, after water had been frozen to some thickness, the fluid part being let out by a hole in the bottom of the vessel, a continuance of the cold made the ice convex; and a piece of ice, which was at first only a 14th part specifically lighter than water, on being exposed some days to the frost, became a 12th part lighter. To this cause he attributes the bursting of ice on ponds.

Wax, resins, and animal fats, made fluid by fire, instead of expanding like watery liquors, shrink in their return to solidity: for solid pieces of the same bodies sink to the bottom of the respective fluids; a proof that these bodies are more dense in their solid than in their fluid state. The oils which congeal by cold, as oil-olive, and the essential oil of aniseeds, appear also to shrink in their congelation. Hence, the different dispositions of different kinds of trees to be burst by, or to resist, strong frosts, are by some attributed to the juices with which the tree abounds; being in the one case watery, and in the other resinous or oily.

Though it has been generally supposed that the natural crystals of ice are stars of six rays, forming angles of 60° with each other, yet this crystallization of water, as it may properly be called, seems to be as much affected by circumstances as that of salts. Hence we

Ice.

find a considerable difference in the accounts of those who have undertaken to describe these crystals. M. Mairan informs us, that they are stars with six radii; and his opinion is confirmed by observing the figure of frost on glass. M. Rome de L'Isle determines the form of the solid crystal to be an equilateral octaedron. M. Hassenfratz found it to be a prismatic hexaedron; but M. d'Antic found a method of reconciling these seemingly opposite opinions. In a violent hail-storm, where the hailstones were very large, he found they had sharp wedge-like angles of more than half an inch; and in these he supposed it impossible to see two pyramidal tetraedra joined laterally, and not to conclude that each grain was composed of octaedrons converging to a centre. Some had a cavity in the middle; and he saw the opposite extremities of two opposite pyramids, which constitute the octaedron; he likewise saw the octaedron entire united in the middle; all of them were therefore similar to the crystals formed upon a thread immersed in a saline solution. On these principles M. Antic constructed an artificial octaedron resembling one of the largest hailstones; and found that the angle at the summit of the pyramid was 45° , but that of the junction of the two pyramids 145° . It is not, however, easy to procure regular crystals in hailstones where the operation is conducted with such rapidity: in snow and hoar-frost, where the crystallization goes on more slowly, our author is of opinion that he sees the rudiments of octaedra.

Ice, as is explained under the article FROST, forms generally on the surface of water: but this too, like the crystallization, may be varied by an alteration in the circumstances. In Germany, particularly the northern parts of that country, it has been observed that there are three kinds of ice. 1. That which forms on the surface. 2. Another kind formed in the middle of the water, resembling nuclei or small hail. 3. The ground-ice which is produced at the bottom, especially where there is any fibrous substance to which it may adhere. This is full of cells like a wasp's nest, but less regular; and performs many strange effects in bringing up very heavy bodies from the bottom, by means of its inferiority in specific gravity to the water in which it is formed. The ice which forms in the middle of the water rises to the top, and there unites into large masses; but the formation both of this and the ground-ice takes place only in violent and sudden colds, where the water is shallow, and the surface disturbed in such a manner that the congelation cannot take place. The ground-ice is very destructive to dykes and other aquatic works. In the more temperate European climates these kinds of ice are not met with.

In many countries the warmth of the climate renders ice not only a desirable, but even a necessary article; so that it becomes an object of some consequence to fall upon a ready and cheap method of procuring it. Though the cheapest method hitherto discovered seems to be that related under the article COLD, by means of sal ammoniac or Glauber's salt, yet it may not be amiss to take notice of some attempts made by Mr Cavallo to discover a method of producing a sufficient degree of cold for this purpose by the evaporation of volatile liquors. He found, however, in the course of these experiments, that ether was in-

com-

comparably superior to any other fluid in the degree of cold it produced. The price of the liquor naturally induced him to fall upon a method of using it with as little waste as possible. The thermometer he made use of had the ball quite detached from the ivory piece on which the scale was engraved. The various fluids was then thrown upon the ball through the capillary aperture of a small glass vessel shaped like a funnel; and care was taken to throw them upon it so slowly, that a drop might now and then fall from the under part, excepting when those fluids were used, which evaporate very slowly; in which case it was sufficient barely to keep the ball moist, without any drop falling from it. During the experiment the thermometer was kept very gently turning round its axis, that the fluid made use of might fall upon every part of its ball. He found this method preferable to that of dipping the ball of the thermometer into the fluid and taking it out again immediately, or even of anointing it constantly with a feather. The evaporation, and consequently the cold, produced by it, may be increased by blowing on the thermometer with a pair of bellows; though this was not used in the experiments now to be related, on account of the difficulty of its being performed by one person, and likewise because it occasions much uncertainty in the results.

The room in which the experiments were made was heated to 64° of Fahrenheit; and with water it was reduced to 56° , viz. 8° below that of the room or of the water employed. The effect took place in about two minutes; but though the operation was continued for a longer time, it did not sink lower. With spirit of wine it sunk to 48° . The cold was greater with highly rectified spirit than with the weaker sort; but the difference is less than would be expected by one who had never seen the experiment made. The pure spirit produces its effect much more quickly. On using various other fluids which were either compounded of water and spirituous liquors or pure essences, he found that the cold produced by their evaporation was generally some intermediate degree between that produced by water and the spirit of wine. Oil of turpentine sunk the mercury three degrees; but olive oil and others, which evaporate very slowly, or not at all, did not sensibly affect the thermometer.

To observe how much the evaporation of spirit of wine, and consequently the cold produced by it, would be increased by electricity, he put the tube containing it into an insulating handle, and connected it with the conductor of an electrical machine, which was kept in action during the time of making the experiment; by which means one degree of cold seemed to be gained, as the mercury now sunk to 47° instead of 48° , at which it had stood formerly. On trying the three mineral acids, he found that they heated the thermometer instead of cooling it; which effect he attributes to the heat they themselves acquired by uniting with the moisture of the atmosphere. The vitriolic acid, which was very strong and transparent, raised the mercury to 102° , the smoking nitrous acid to 72° , and the marine to 66° .

The apparatus for using the least possible quantity of ether for freezing water consists in a glass tube

(fig. 1.), terminating in a capillary aperture, which is to be fixed upon the bottle containing the ether. Round the lower part of the neck at A some thread is wound, in order to let it fit the neck of the bottle. When the experiment is to be made, the stopper of the bottle containing the ether is to be removed, and the tube just mentioned put in its room. The thread round the tube ought also to be previously moistened with water or spittle before it is put into the neck of the bottle, in order the more effectually to prevent the escape of the ether betwixt the neck of the vial and tube. Holding then the bottle by its bottom FG (fig. 2.), and keeping it inclined as in the figure, the small stream of ether issuing out of the aperture D of the tube DE, is directed upon the ball of the thermometer, or upon a tube containing water or other liquor that is required to be congealed. As ether is very volatile, and has the remarkable property of increasing the bulk of air, there is no aperture requisite to allow the air to enter the bottle while the liquid flows out. The heat of the hand is more than sufficient to force out the ether in a continued stream at the aperture D.

In this manner, throwing the stream of ether upon the ball of a thermometer in such a quantity that a drop might now and then, every 10 seconds for instance, fall from the bulb of the thermometer, Mr Cavallo brought the mercury down to 3° , or 29° below the freezing point, when the atmosphere was somewhat hotter than temperate. When the ether is very good, i.e. capable of dissolving elastic gum, and has a small bulb, not above 20 drops of it are required to produce this effect, and about two minutes of time; but the common sort must be used in greater quantity, and for a longer time; though at last the thermometer is brought down by this very nearly as low as by the best sort.

To freeze water by the evaporation of ether, Mr Cavallo takes a thin glass tube about four inches long, and one-fifth of an inch diameter, hermetically sealed at one end, with a little water in it, so as to take up about half an inch of the cavity, as is shown at CB in fig. 3. Into this tube a slender wire H is also introduced, the lower extremity of which is twisted into a spiral, and serves to draw up the bit of ice when formed. He then holds the glass tube by its upper part A with the fingers of the left hand, and keeps it continually and gently turning round its axis, first one way and then the other; whilst with the right hand he holds the phial containing the ether in such a manner as to direct the stream on the outside of the tube, and a little above the surface of the water contained in it. The capillary aperture D should be kept almost in contact with the surface of the tube containing the water; and by continuing the operation for two or three minutes, the water will be frozen as it were in an instant; and the opacity will ascend to C in less than half a second of time, which makes a beautiful appearance. This congelation, however, is only superficial; and in order to congeal the whole quantity of water, the operation must be continued a minute or two longer; after which the wire H will be found kept very tight by the ice. The hand must then be applied to the outside of the tube, in order to soften

Ice.

Plate
CCL.

the surface of the ice; which would otherwise adhere very firmly to the glass; but when this is done, the wire H easily brings it out.

Sometimes our author was accustomed to put into the tube a small thermometer instead of the wire H; and thus he had an opportunity of observing a very curious phenomenon unnoticed by others, viz. that in the winter time water requires a smaller degree of cold to congeal it than in the summer. In the winter, for instance, the water in the tube AB will freeze when the thermometer stands about 30°; but in the summer, or even when the thermometer stands at 60°, the quicksilver must be brought down 10, 15, or even more degrees below the freezing point before any congelation can take place. In the summer time therefore a greater quantity of ether, and more time, will be required to congeal any given quantity of water than in winter. When the temperature of the atmosphere has been about 40°, our author has been able to congeal a quantity of water with an equal quantity of good ether; but in summer two or three times the quantity are required to perform the effect. "There seems (says he) to be something in the air, which, besides heat, interferes with the freezing of water, and perhaps of all fluids; though I cannot say from my own experience whether the above mentioned difference between the freezing in winter and summer takes place with other fluids, as milk, oils, wines," &c.

The proportion of ether requisite to congeal water seems to vary with the quantity of the latter; that is, a large quantity of water seems to require a proportionably less quantity of ether to freeze it than a smaller one. "In the beginning of the spring (says Mr Cavallo), I froze a quarter of an ounce of water with about half an ounce of ether; the apparatus being larger, though similar to that described above. Now as the price of ether, sufficiently good for the purpose, is generally about 18d. or 2s. per ounce, it is plain, that with an expence under two shillings, a quarter of an ounce of ice, or ice cream, may be made, in every climate, and at any time, which may afford great satisfaction to those persons, who, living in those places where no natural ice is to be had, never saw or tasted any such delicious refreshment. When a small piece of ice, for instance, of about ten grains weight, is required, the necessary apparatus is very small, and the expence not worth mentioning. I have a small box four inches and a half long, two inches broad, and one and a half deep, containing all the apparatus necessary for this purpose; viz. a bottle capable of containing about one ounce of ether; two pointed tubes, in case one should break; a tube in which the water is to be frozen, and a wire. With the quantity of ether contained in this small and very portable apparatus, the experiment may be repeated about ten times. A person who wishes to perform such experiments in hot climates, and in places where ice is not easily procured, requires only a larger bottle of ether besides the whole apparatus described above." Electricity increases the cold produced by means of evaporating ether but very little, though the effect is perceptible. Having thrown the electrified and also the unelectrified stream of ether upon the bulb of a thermometer, the mercury was brought down two degrees lower in the former than in the latter case.

Our author observes, for the sake of those who may be inclined to repeat this experiment, that a cork confines this volatile fluid much better than a glass stopple, which it is almost impossible to grind with such exactness as to prevent entirely the evaporation of the ether. When a stopple, made very nicely out of an uniform and close piece of cork, which goes rather tight, is put upon a bottle of ether, the smell of that fluid cannot be perceived through it; but he never saw a glass stopple which could produce that effect. In this manner, ether, spirit of wine, or any other volatile fluid, may be preserved, which does not corrode cork by its fumes. When the stopple, however, is very often taken out, it becomes loose, as it will also do by long keeping; in either of which cases it must be changed.

Blink of the Ice, is a name given by the pilots to a bright appearance near the horizon occasioned by the ice, and observed before the ice itself is seen.

Ice-Boats, boats so constructed as to sail upon ice, and which are very common in Holland, particularly upon the river Maese and the lake Y. See Plate CCL. They go with incredible swiftness, sometimes so quick as to affect the breath, and are found very useful in conveying goods and passengers over lakes and great rivers in that country. Boats of different sizes are placed in a transverse form upon a 2½ or 3 inch deal boards at the extremity of each end are fixed irons, which turn up in the form of skais; upon this plank the boat rests, and the two ends seem as out-riggers to prevent oversetting; whence ropes are fastened that lead to the head of the mast in the nature of shrouds, and others passed through a block across the bowsprit: the rudder is made somewhat like a hatchet with the head placed downward, which being pressed down, cuts the ice, and serves all the purposes of a rudder in the water, by enabling the helmsman to steer, tack, &c.

Method of making Ice-Cream. Take a sufficient quantity of cream, and, when it is to be mixed with raspberry, or currant, or pine, a quarter part as much of the juice or jam as of the cream: after beating and straining the mixture through a cloth, put it with a little juice of lemon into the mould, which is a pewter vessel, and varying in size and shape at pleasure; cover the mould and place it in a pail about two-thirds full of ice, into which two handfuls of salt have been thrown; turn the mould by the hand-hold with a quick motion to and fro, in the manner used for milling chocolate, for eight or ten minutes; then let it rest as long, and turn it again for the same time; and having left it to stand half an hour, it is fit to be turned out of the mould and to be sent to table. Lemon juice and sugar, and the juices of various kinds of fruits, are frozen without cream; and when cream is used, it should be well mixed.

Ice-Hills, a sort of structure or contrivance common upon the river Neva at Peterburgh, and which afford a perpetual fund of amusement to the populace. They are constructed in the following manner. A scaffolding is raised upon the river about 30 feet in height, with a landing place on the top, the ascent to which is by a ladder. From this summit a sloping plain of boards, about four yards broad and 30 long, descends to the superficies of the river: it is supported by strong poles gradually decreasing in height, and its sides are defended by a parapet of planks. Upon these boards are

Ice.



Fig. 2.

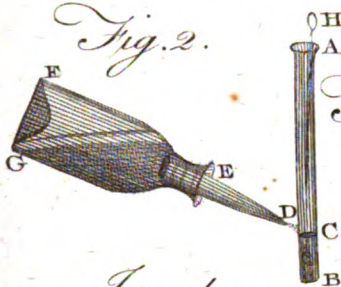
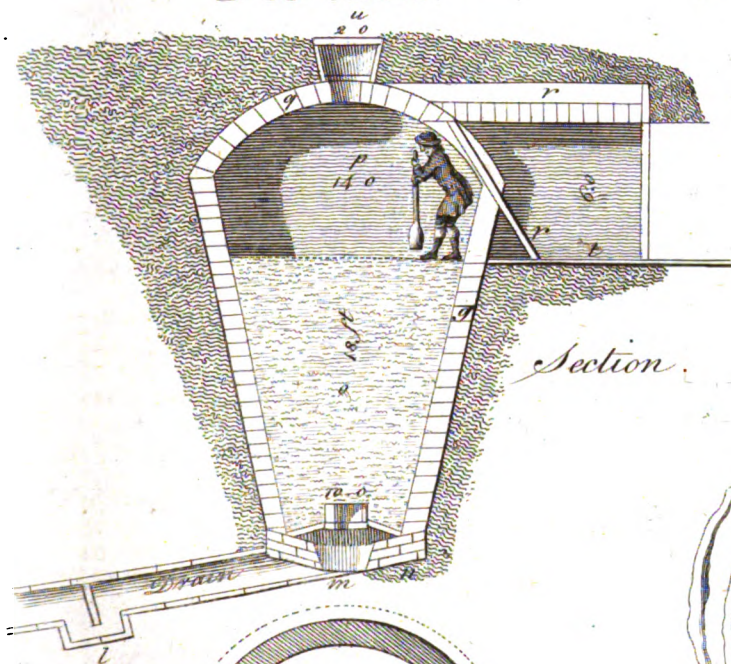


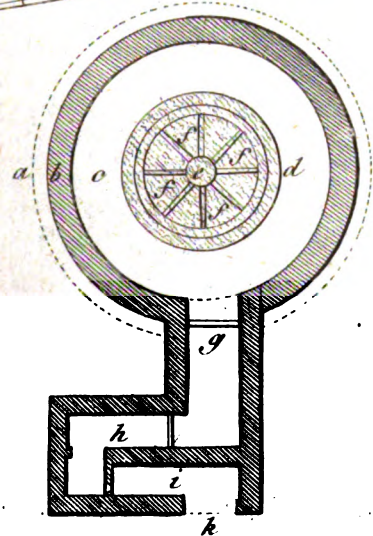
Fig. 3.



Ice-house.

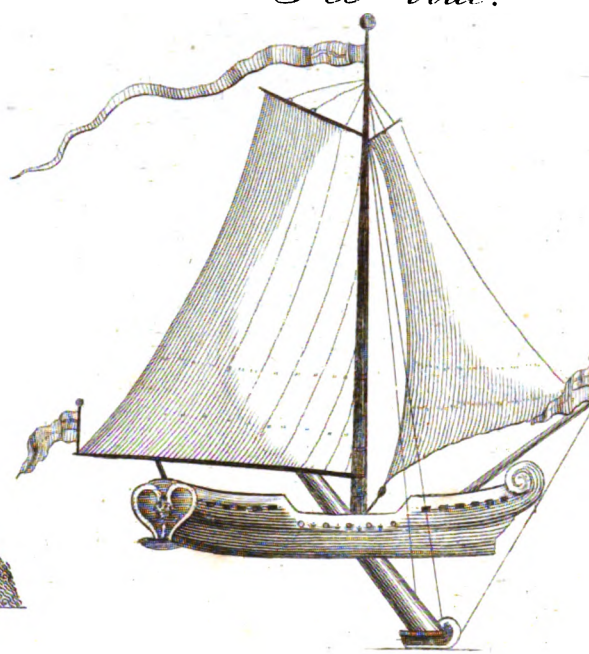


Section.

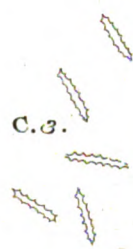


Plan.

Ice-boat.



Keratophyta.



Ed. Ball & Mrs. W. Delaport, sculp.

Ice. laid square masses of ice about four inches thick, which being first smoothed with the axe and laid close to each other, are then sprinkled with water: by these means they coalesce, and, adhering to the boards, immediately form an inclined plain of pure ice. From the bottom of this plain the snow is cleared away for the length of 200 yards and the breadth of four, upon the level bed of the river; and the sides of this course, as well as the sides and top of the scaffolding, are ornamented with firs and pines. Each person, being provided with a sledge, mounts the ladder; and having attained the summit, he sets himself upon his sledge at the upper extremity of the inclined plain, down which he suffers it to glide with considerable rapidity, poising it as he goes down; when the velocity acquired by the descent carries it above 100 yards upon the level ice of the river. At the end of this course, there is usually a similar ice-hill, nearly parallel to the former, which begins where the other ends; so that the person immediately mounts again, and in the same manner glides down the other inclined plain of ice. This diversion he repeats as often as he pleases. The boys also are continually employed in skating down these hills: they glide chiefly upon one skait, as they are able to poise themselves better upon one leg than upon two. These ice-hills exhibit a pleasing appearance upon the river, as well from the trees with which they are ornamented, as from the moving objects which at particular times of the day are descending without intermission.

Ice-House, a repository for ice during the summer months. The aspect of ice-houses should be towards the east or south-east, for the advantage of the morning sun to expel the damp air, as that is more pernicious than warmth; for which reason trees in the vicinity of an ice-house tend to its disadvantage.

The best soil for an ice-house to be made in is chalk, as it conveys away the waste water without any artificial drain; next to that, loose stony earth or gravelly soil. Its situation should be on the side of a hill, for the advantage of entering the cell upon a level, as in the drawing, Plate CCL.

To construct an ice-house, first choose a proper place at a convenient distance from the dwelling-house or houses it is to serve: dig a cavity (if for one family, of the dimensions specified in the design) of the figure of an inverted cone, sinking the bottom, concave, to form a reservoir for the waste water till it can drain off; if the soil requires it, cut a drain to a considerable distance, or so far as will come out at the side of the hill, or into a well, to make it communicate with the springs, and in that drain form a sink or air-trap, marked *l*, by sinking the drain so much lower in that place as it is high, and bring a partition from the top an inch or more into the water, which will consequently be in the trap; and will keep the well air-tight. Work up a sufficient number of brick piers to receive a cart-wheel, to be laid with its convex side upwards to receive the ice; lay hurdles and straw upon the wheel, which will let the melted ice drain through, and serve as a floor. The sides and dome of the cone are to be nine inches thick—the sides to be done in steened brickwork, *i. e.* without mortar, and wrought at right angles to the face of the work: the filling in behind should be with gravel, loose stones, or brick-bats, that the water which drains through the sides may the more

easily escape into the well. The doors of the ice-house should be made as close as possible, and bundles of straw placed always before the inner door to keep out the air.

Description of the parts referred to by the letters.

a The line first dug out. *b* The brick circumference of the cell. *c* The diminution of the cell downwards. *d* The lesser diameter of the cell. *e* The cart wheel or joists and hurdles. *f* The piers to receive the wheel or floor. *g* The principal receptacle for straw. *h* The inner passage, *i* the first entrance, *k* the outer door, passages having a separate door each. *l* An air trap. *m* The well. *n* The profile of the piers. *o* The ice filled in. *p* The height of the cone. *q* The dome worked in two half-brick arches. *r* The arched passage. *s* The door-ways inserted in the walls. *t* The floor of the passage. *u* An aperture through which the ice may be put into the cell; this must be covered next the crown of the dome, and then filled in with earth. *x* The sloping door, against which the straw should be laid.

The ice when to be put in should be collected during the frost, broken into small pieces, and rammed down hard in strata of not more than a foot, in order to make it one complete body; the care in putting it in, and well ramming it, tends much to its preservation. In a season when ice is not to be had in sufficient quantities snow may be substituted.

Ice may be preserved in a dry place under ground, by covering it well with chaff, straw, or reeds.

Great use is made of chaff in some places of Italy to preserve ice: the ice-house for this purpose need only be a deep hole dug in the ground on the side of a hill, from the bottom of which they can easily carry out a drain, to let out the water which is separated at any time from the ice, that it may not melt and spoil the rest. If the ground is tolerably dry, they do not line the sides with any thing, but leave them naked, and only make a covering of thatch over the top of the hole: this pit they fill either with pure snow, or else with ice taken from the purest and clearest water; because they do not use it as we do in England, to set the bottles in, but really mix it with the wine. They first cover the bottom of the hole with chaff, and then lay in the ice, not letting it any where touch the sides, but ramming in a large bed of chaff all the way between: they thus carry on the filling to the top, and then cover the surface with chaff; and in this manner it will keep as long as they please. When they take any of it out for use, they wrap the lump up in chaff, and it may then be carried to any distant place without waste or running.

Ice-Island, a name given by sailors to a great quantity of ice collected into one huge solid mass, and floating about upon the seas near or within the Polar circles. Many of these fluctuating islands are met with on the coasts of Spitzbergen, to the great danger of the shipping employed in the Greenland fishery. In the midst of those tremendous masses navigators have been arrested and frozen to death. In this manner the brave Sir Hugh Willoughby perished with all his crew in 1553; and in the year 1773, Lord Mulgrave, after every effort which the most finished seaman could make to accomplish the end of his voyage, was caught in the ice, and was near experiencing the same unhappy fate. See the

Ice.

the account at large in *Phipps's Voyage to the North Pole*. As there described, the scene, divested of the horror from the eventful expectation of change, was the most beautiful and picturesque:—Two large ships becalmed in a vast basin, furrounded on all sides by islands of various forms: the weather clear: the sun gilding the circumambient ice, which was low, smooth, and even; covered with snow, excepting where the pools of water on part of the surface appeared crystalline with the young ice: the small space of sea they were confined in perfectly smooth. After fruitless attempts to force a way through the fields of ice, their limits were perpetually contracted by its closing; till at length it beset each vessel till they became immoveably fixed. The smooth extent of surface was soon lost: the pressure of the pieces of ice, by the violence of the swell, caused them to pack; fragment rose upon fragment, till they were in many places higher than the main-yard. The movements of the ships were tremendous and involuntary, in conjunction with the surrounding ice, actuated by the currents. The water shoaled to 14 fathoms. The grounding of the ice or of the ships would have been equally fatal: The force of the ice might have crushed them to atoms, or have lifted them out of the water and overset them, or have left them suspended on the summits of the pieces of ice at a tremendous height, exposed to the fury of the winds, or to the risk of being dashed to pieces by the failure of their frozen dock. An attempt was made to cut a passage through the ice; after a perseverance worthy of Britons, it proved fruitless. The commander, at all times master of himself, directed the boats to be made ready to be hauled over the ice, till they arrived at navigable water (a task alone of seven days), and in them to make their voyage to England. The boats were drawn progressively three whole days. At length a wind sprung up, the ice separated sufficiently to yield to the pressure of the full-sailed ships, which, after labouring against the resisting fields of ice, arrived on the 10th of August in the harbour of Smeeringberg, at the west end of Spitzbergen, between it and Hackluyt's Headland.

The forms assumed by the ice in this chilling climate are extremely pleasing to even the most incurious eye. The surface of that which is congealed from the sea-water (for we must allow it two origins) is flat and even, hard, opaque, resembling white sugar, and incapable of being slid on, like the British ice. The greater pieces, or fields, are many leagues in length: the lesser are the meadows of the seals, on which those animals at times frolic by hundreds. The motion of the lesser pieces is as rapid as the currents: the greater, which are sometimes 200 leagues long, and 60 or 80 broad, move slow and majestically; often fix for a time, immovable by the power of the ocean, and then produce near the horizon that bright white appearance called the *blink*. The approximation of two great fields produces a most singular phenomenon; it forces the lesser (if the term can be applied to pieces of several acres square) out of the water, and adds them to their surface: a second and often a third succeeds; so that the whole forms an aggregate of a tremendous height. These float in the sea like so many rugged mountains, and are sometimes 500 or 600 yards thick; but the far greater part is concealed beneath the water. These

are continually increased in height by the freezing of the spray of the sea, or of the melting of the snow, which falls on them. Those which remain in this frozen climate receive continual growth; others are gradually wafted by the northern winds into southern latitudes, and melt by degrees, by the heat of the sun, till they waste away, or disappear in the boundless element.

The collision of the great fields of ice, in high latitudes, is often attended with a noise that for a time takes away the sense of hearing any thing else; and the lesser with a grinding of unspeakable horror. The water which dashes against the mountainous ice freezes into an infinite variety of forms; and gives the voyager ideal towns, streets, churches, steeples, and every shape which imagination can frame.

Ice-Plant. See MESEMBRYANTHEMUM.

ICEBERGS, are large bodies of ice filling the valleys between the high mountains in northern latitudes. Among the most remarkable are those of the east coast of Spitzbergen; (see GREENLAND, no 10.) They are seven in number, but at considerable distances from each other: each fills the valleys for tracts unknown, in a region totally inaccessible in the internal parts. The glaciers * of Switzerland seem contemptible to these; but present often a similar front into some lower *See Glacier* valley. The last exhibits over the sea a front 300 feet high, emulating the emerald in colour: cataracts of melted snow precipitate down various parts, and black spiring mountains, streaked with white, bound the sides, and rise crag above crag, as far as eye can reach in the back ground. See Plate CCLI. At times immense fragments break off, and tumble into the water, with a most alarming dashing. A piece of this vivid green substance has fallen, and grounded in 24 fathoms water, and spired above the surface 50 feet †. Similar icebergs are frequent in all the Arctic regions; and to their lapses is owing the solid mountainous ice which † *Phipps's Voyage*, p. 70. infests those seas.—Frost sports wonderfully with these icebergs, and gives them majestic as well as other most singular forms. Masses have been seen assuming the shape of a Gothic church, with arched windows and doors, and all the rich drapery of that style, composed of what 'an Arabian tale would scarcely dare to relate, of crystal of the richest sapphire blue: tables with one or more feet; and often immense flat-roofed temples, like those of Luxxor on the Nile, supported by round transparent columns of coerulean hue, float by the astonished spectator.—These icebergs are the creation of ages, and receive annually additional height by the falling of snows and of rain, which often instantly freezes, and more than repairs the loss occasioned by the influence of the melting sun.

ICELAND, a large island lying in the northern part of the Atlantic Ocean, between 63 and 68 degrees of north latitude, and between 10 and 26 degrees of west longitude, its greatest length being about 700 miles, and its breadth 300.

This country lying partly within the frigid zone, and being liable to be surrounded with vast quantities of ice which come from the polar seas, is on account of the coldness of its climate very inhospitable; but much more so for other reasons. It is exceedingly subject to earthquakes; and so full of volcanoes, that the little part of it which appears fit for the habitation of man seems

Iceland. seems almost totally laid waste by them. The best account that hath yet appeared of the island of Iceland is in a late publication intitled, "Letters on Iceland, &c. written by Uno Von Troil, D. D. first chaplain to his Swedish majesty." This gentleman sailed from London on the 12th of July 1772, in company with Mr Banks, Dr Solander, and Dr James Lind of Edinburgh, in a ship for which L. 100 Sterling was paid every month. After visiting the western isles of Scotland, they arrived on the 28th of August at Iceland, where they cast anchor at Bessfedr or Bessfadr, lying in about 64° 6' N. Lat. in the western part of the island. The country had to them the most dismal appearance that can be conceived. "Imagine to yourself (says Dr Troil) a country, which from one end to the other presents to your view only barren mountains, whose summits are covered with eternal snow, and between them fields divided by vitrified cliffs, whose high and sharp points seem to vie with each other to deprive you of the sight of a little grass which scantily springs up among them. These same dreary rocks likewise conceal the few scattered habitations of the natives, and no where a single tree appears which might afford shelter to friendship and innocence. The prospect before us, though not pleasing, was uncommon and surprising. Whatever presented itself to our view bore the marks of desolation; and our eyes, accustomed to behold the pleasing coasts of England, now saw nothing but the vestiges of the operation of a fire, Heaven knows how ancient!

2
Account
of the cli-
mate.

The climate of Iceland, however, is not unwholesome or naturally subject to excessive colds, notwithstanding its northwardly situation. There have been instances indeed of Fahrenheit's thermometer sinking to 24° below the freezing point in winter, and rising to 104° in summer. Since the year 1749, observations have been made on the weather; and the result of these observations hath been unfavourable, as the coldness of the climate is thought to be on the increase, and of consequence the country is in danger of becoming unfit for the habitation of the human race. Wood, which formerly grew in great quantities all over the island, cannot now be raised. Even the hardy firs of Norway cannot be reared in this island. They seemed indeed to thrive till they were about two feet high; but then their tops withered, and they ceased to grow. This is owing chiefly to the storms and hurricanes which frequently happen in the months of May and June, and which are very unfavourable to vegetation of every kind. In 1772, governor Thodal sowed a little barley, which grew very briskly; but a short time before it was to be reaped, a violent storm so effectually destroyed it, that only a few grains were found scattered about. Besides these violent winds, this island lies under another disadvantage, owing to the floating ice already mentioned, with which the coasts are often beset. This ice comes on by degrees, always with an easterly wind, and frequently in such quantities as to fill up all the gulphs on the north-west side of the island, and even covers the sea as far as the eye can reach; it also sometimes drives to other shores. It generally comes in January, and goes away in March. Sometimes it only reaches the land in April; and, remaining there for a long time, does an incredible deal of mischief. It consists partly of mountains of ice, said to be sometimes 60

fathoms in height; and partly of field-ice, which is neither so thick nor so much dreaded. Sometimes these enormous masses are grounded in shoal-water; and in these cases they remain for many months, nay years, undissolved, chilling the atmosphere for a great way round. When many such bulky and lofty ice-masses are floating together, the wood which is often found drifting between them, is so much chafed, and pressed with such violence together, that it sometimes takes fire: which circumstance has occasioned fabulous accounts of the ice being in flames.

In 1753 and 1754, this ice occasioned such a violent cold, that horses and sheep dropped down dead by reason of it, as well as for want of food; horses were observed to feed upon dead cattle, and the sheep eat of each other's wool. In 1755, towards the end of the month of May, the waters were frozen over in one night to the thickness of an inch and five lines. In 1756, on the 26th of June, snow fell to the depth of a yard, and continued falling through the months of July and August. In the year following it froze very hard towards the end of May and beginning of June, in the south part of the island, which occasioned a great scarcity of grass. These frosts are generally followed by a famine, many examples of which are to be found in the Icelandic chronicles. Besides these calamities, a number of bears annually arrive with the ice, which commit great ravages among the sheep. The Icelanders attempt to destroy these intruders as soon as they get sight of them. Sometimes they assemble together, and drive them back to the ice, with which they often float off again. For want of fire-arms, they are obliged to use spears on these occasions. The government also encourage the destruction of these animals, by paying a premium of 10 dollars for every bear that is killed, and purchasing the skin of him who killed it.

Notwithstanding this dismal picture, however, taken from Von Troil's letters, some tracts of ground, in high cultivation, are mentioned as being covered by the great eruption of lava in 1783. It is possible, therefore, that the above may have been somewhat exaggerated.

Thunder and lightning are seldom heard in Iceland, except in the neighbourhood of volcanoes. Aurora Borealis is very frequent and strong. It most commonly appears in dry weather; though there are not wanting instances of its being seen before or after rain, or even during the time of it. The lunar halo, which prognosticates bad weather, is likewise very frequent here; as are also parheliions, which appear from one to nine in number at a time. These parheliions are observed chiefly at the approach of the Greenland ice, when an intense degree of frost is produced, and the frozen vapours fill the air. Fire-balls, sometimes round and sometimes oval, are observed, and a kind of *ignis fatuus* which attaches itself to men and beasts; and comets are also frequently mentioned in their chronicles. This last circumstance deserves the attention of astronomers.

Iceland, besides all the inconveniencies already mentioned, has two very terrible ones, called by the natives *skrida* and *snigfodi*: the name of the first imports large pieces of a mountain tumbling down and destroying the lands and houses which lie at the foot of it: this happened in 1554, when a whole farm was ruined,

and

Iceland. and 13 people buried alive. The other word signifies the effects of a prodigious quantity of snow, which covers the tops of the mountains, rolling down in immense masses, and doing a great deal of damage: of this there was an instance in 1699; during the night, when two farms were buried, with all their inhabitants and cattle. This last accident Iceland has in common with all very mountainous countries, particularly Switzerland.

3
Account of
the hot
springs of
Iceland
from Von
Troil's Let-
ters.

"Iceland abounds with hot and boiling springs, some of which spout up into the air to a surprising height. All the jets d'eau which have been contrived with so much art, and at such an enormous expence, cannot by any means be compared with these wonders of nature in Iceland. The water-works at Herenhausen throw up a single column of water of half a quarter of a yard in circumference to a height of about 70 feet; those at the Winterkasten at Cassel throw it up, but in a much thinner column, 130 feet; and the jet d'eau at St Cloud, which is thought the greatest of all the French water-works, casts up a thin column 80 feet into the air: but some springs in Iceland pour forth columns of water several feet in thickness to the height of many fathoms; and many affirm of several hundred feet.

"These springs are unequal in their degrees of heat; but we have observed none under 188 degrees of Fahrenheit's thermometer; in some it is 192, 193, 212, and in one small vein of water 213 degrees. From some the water flows gently, and the spring is then called *laug*, "a bath;" from others it spouts with a great noise, and is then called *Hvæa*, or *kittel*. It is very common for some of these spouting springs to close up, and others to appear in their stead. All these hot waters have an incrusting quality; so that we very commonly find the exterior surface from whence it bursts forth covered with a kind of rind, which almost resembles chased work, and which we at first took for lime, but which was afterwards found by Mr Bergman to be of a siliceous or stony nature. In some places the water tastes of sulphur, in others not; but when drank as soon as it is cold, tastes like common boiled water. The inhabitants use it at particular times for dyeing; and were they to adopt proper regulations, it might be of still greater use. Victuals may also be boiled in it, and milk held over its steam becomes sweet; owing, most probably, to the excessive heat of the water, as the same effect is produced by boiling it a long time over the fire. They have begun to make salt by boiling sea-water over it, which when it is refined, is very pure and good. The cows which drink this hot water yield a great deal of milk. Egbert Olafsen relates, that the water does not become turbid when alkali is thrown into it, nor does it change the colour of syrup of violeta. Horrebow asserts, that if you fill a bottle at one of the spouting springs, the water will boil over two or three times while the spring throws forth its water; and if corked too soon, the bottle will burst.

4
A particu-
lar descrip-
tion of one
named
Geyser.

"Among the many hot springs to be met with in Iceland, several bear the name of *geyser*: the following is a description of the most remarkable of that name, and in the whole island. It is about two days journey from Hecla, near a farm called *Haukadul*. Here a poet would have an opportunity of painting
N^o 163.

Iceland. whatever nature has of beautiful and terrible, united in one picture, by delineating this surprising phenomenon. Represent to yourself a large field, where you see on one side, at a great distance, high mountains covered with ice, whose summits are generally wrapped in clouds, so that their sharp and unequal points become invisible. This loss, however, is compensated by a certain wind, which causes the clouds to sink, and cover the mountain itself when its summit appears as it were to rest on the clouds. On the other side Hecla is seen, with its three points covered with ice, rising above the clouds, and, with the smoke which ascends from it, forming other clouds at some distance from the real ones: and on another side is a ridge of high rocks, at the foot of which boiling water from time to time issues forth; and further on extends a marsh of about three English miles in circumference, where are 40 or 50 boiling springs, from which a vapour ascends to a prodigious height.—In the midst of these is the greatest spring *geyser*, which deserves a more exact and particular account. In travelling to the place about an English mile and an half from the *boer*, from which the ridge of rocks still divided us, we heard a loud roaring noise, like the rushing of a torrent precipitating itself from stupendous rocks. We asked our guide what it meant; he answered, it was *geyser* roaring; and we soon saw with our naked eyes what before seemed almost incredible.

"The depth of the opening or pipe from which the water gushes cannot well be determined; for sometimes the water sunk down several fathoms, and some seconds passed before a stone which was thrown into the aperture reached the surface of the water. The opening itself was perfectly round, and 19 feet in diameter, and terminated in a basin 59 feet in diameter. Both the pipe and the basin were covered with a rough staccato rind, which had been formed by the force of the water: the outermost border of the basin is nine feet and an inch higher than the pipe itself. The water here spouted several times a-day, but always by starts, and after certain intervals. The people who lived in the neighbourhood told us, that they rose higher in cold and bad weather than at other times; and Egbert Olafsen and several others affirm, that it has spouted to the height of 60 fathoms. Most probably they guessed only by the eye, and on that account their calculation may be a little extravagant; and indeed it is to be doubted whether the water was ever thrown up so high, though probably it sometimes mounts higher than when we observed it. The method we took to observe the height was as follows. Every one in company wrote down, at each time that the water spouted, how high it appeared to him to be thrown, and we afterwards chose the medium. The first column marks the spoutings of the water, in the order in which they followed one another; the second, the time when these effusions happened; the third, the height to which the water rose; and the last, how long each spouting of water continued.

N ^o	Time	Height	Duration
1	At VI 42 m.	30 feet	0 20 seconds
2	—51	6	0 20
3	—VII 16	6	0 10
4	—31	12	0 15
5	—51	60	0 6

N^o

Iceland	Nº	Time	Height	Duration
	6—VIII.	17	24	0 30
	7—	29	18	0 40
	8—	36	12	0 40

The pipe was now for the first time full of water, which ran slowly into the basin.

9—IX.	25	48	1 10
10—X.	16	24	1 00

"At 35 minutes after twelve we heard as it were three discharges of a gun under ground, which made it shake: the water flowed over immediately, but instantly sunk again. At eight minutes after two, the water flowed over the border of the basin. At 15 minutes after three, we again heard several subterranean noises, though not so strong as before. At 43 minutes after four, the water flowed over very strongly during the space of a minute. In six minutes after, we heard many loud subterraneous discharges, not only near the spring, but also from the neighbouring ridge of rocks where the water spouted. At 51 minutes after six, the fountain spouted up to the height of 92 feet, and continued to do so for four minutes. After this great effort, it sunk down very low into the pipe, and was entirely quiet during several minutes; but soon began to bubble again: it was not, however, thrown up into the air, but only to the top of the pipe.

"The force of the vapours which throw up these waters is excessive; it not only prevents the stones which are thrown into the opening from sinking, but even throws them up to a very great height, together with the water. When the basin was full, we placed ourselves before the sun in such a manner that we could see our shadows in the water; when every one observed round the shadow of his own head (though not round that of the heads of others,) a circle of almost the same colours which compose the rainbow, and round this another bright circle. This most probably proceeded from the vapours exhaling from the water.

"Not far from this place, another spring at the foot of the neighbouring ridge of rocks spouted water to the height of one or two yards each time. The opening through which this water issued was not so wide as the other: we imagined it possible to stop up the hole entirely by throwing large stones into it, and even flattered ourselves that our attempts had succeeded: but, to our astonishment, the water gushed forth in a very violent manner. We hastened to the pipe, and found all the stones thrown aside, and the water playing freely through its former channel. In these large springs the waters were hot in the highest degree, and tasted a little of sulphur; but in other respects it was pure and clear. In the smaller springs of the neighbourhood the water was tainted: in some, it was as muddy as that of a clay-pit: in others, as white as milk; and in some few, as red as blood.

5
Account of
the basaltic
pillars, &c.
"Iceland abounds with pillars of basalt, which the lower sort of people imagine have been piled upon each other by the giants, who made use of supernatural force to effect it. They have generally from three to seven sides; and are from four to six feet in thickness, and from 12 to 16 yards in length, without any horizontal divisions. But sometimes they are only

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from six inches to one foot in height, and they are then very regular, inasmuch that they are sometimes made use of for windows and door-posts. In some places they only peep out here and there among the lava, or more frequently among the tufa; in other places they are quite overthrown, and pieces of broken pillars only make their appearance. Sometimes they extend without interruption for two or three miles in length. In one mountain they have a singular appearance: on the top the pillars lie horizontally, in the middle they are sloping; the lowest are perfectly perpendicular; and in some parts they are bent into a semicircular figure. The matter of the Iceland basalt seems to be the same with that of STAFFA; though in some it is more porous, and inclines to a grey. Some we observed which were of a blackish grey, and composed of several joints. Another time we observed a kind of porous glassy stone, consequently a lava, which was so indistinctly divided, that we were for some time at a loss to determine whether it was basalt or not, though at last we all agreed that it was."

Iron ore is found in some parts of the island, and that beautiful copper ore called *Malachites*. Horrebow speaks of native silver. A stratum of sulphur is found near Myvatn from nine inches to two feet in thickness; partly of a brown colour, and partly of a deep orange. Immediately over the sulphur is a blue earth; above that a vitriolic and aluminous one; and beneath the sulphur a reddish bole.

At what time the island of Iceland was first peopled is uncertain. An English colony indeed is said to have been settled there in the beginning of the fifth century; but of this there are not sufficient proofs. There is, however, reason to suppose that the English and Irish were acquainted with this country under another name, long before the arrival of the Norwegians; for the celebrated Bede gives a pretty accurate description of the island. But of these original inhabitants we cannot pretend to say any thing, as the Icelandic chronicles go no farther back than the arrival of the Norwegians. What they relate is to the following purpose.

Naddodr, a famous pirate, was driven on the coast of Iceland in 861, and named the country *Sniö-land*, "Snow-land," on account of the great quantities of snow with which he perceived the mountains covered. He did not remain there long; but on his return extolled the country to such a degree, that one Garder Suafarson, an enterprising Swede, was encouraged by his account to go in search of it in 864. He sailed quite round the island, and gave it the name of *Gardarbolmur*, or Garder's-island. Having remained in Iceland during the winter, he returned in the spring to Norway, where he described the new-discovered island as a pleasant well-wooded country. This excited a desire in Floke, another Swede, reputed the greatest navigator of his time, to undertake a voyage thither. As the compass was then unknown, he took three ravens on board to employ them on the discovery. By the way he visited his friends at Ferro; and having sailed farther to the northward, he let fly one of his ravens, which returned to Ferro. Some time after, he dismissed the second, which returned to the ship again, as he could find no land. The last trial proved more successful; the third raven took his flight to Iceland, where

Iceland. where the ship arrived a few days after. Floke staid here the whole winter with his company; and, because he found a great deal of floating ice on the north side, he gave the country the name of *Iceland*, which it has ever since retained.

When they returned to Norway in the following spring, Floke, and those that had been with him, made a very different description of the country. Floke described it as a wretched place; while one of his companions, named *Thorulfr*, praised it so highly, that he affirmed butter dropped from every plant; which extravagant commendation procured him the name of *Thorulfr-smior*, or Butter-Thorulfr.

From this time there are no accounts of any voyages to Iceland, till Ingolfr and his friend Leifr undertook one in 874. They spent the winter on the island, and determined to settle there for the future. Ingolfr returned to Norway, to provide whatever might be necessary for the comfortable establishment of a colony, and Leifr in the mean time went to assist in the war in England. After an interval of four years, they again met in Iceland, the one bringing with him a considerable number of people, with the necessary tools and instruments for making the country habitable; and the other imported his acquired treasures. After this period many people went there to settle; and, in the space of 60 years, the whole island was inhabited. The tyranny of Harold king of Norway contributed not a little to the population of Iceland; and so great was the emigration of his subjects, that he was at last obliged to issue an order, that no one should sail from Norway to Iceland without paying four ounces of fine silver to the king.

Besides the Norwegians, new colonies arrived from different nations, between whom wars soon commenced; and the Icelandic histories are full of the accounts of their battles. To prevent these conflicts for the future, a kind of chief was chosen in 928, upon whom great powers were conferred. This man was the speaker in all their public deliberations; pronounced sentence in difficult and intricate cases; decided all disputes; and published new laws, after they had been received and approved of by the people at large: but he had no power to make laws without the approbation and consent of the rest. He therefore assembled the chiefs, whenever the circumstances seemed to require it; and, after they had deliberated among themselves, he represented the opinion of the majority to the people, whose assent was necessary before it could be considered as a law. His authority among the chiefs and leaders, however, was inconsiderable, as he was chosen by them, and retained his place no longer than while he preserved their confidence.

This institution did not prove sufficient to restrain the turbulent spirit of the Icelanders. They openly waged war with each other; and, by their intestine conflicts, so weakened all parties, that the whole became at last a prey to a few arbitrary and enterprising men; who, as is too generally the case, wantonly abused their power to the oppression of their countrymen, and the disgrace of humanity. Notwithstanding these troubles, however, the Icelanders remained free from a foreign yoke till 1261; when the greatest part of them put themselves under the protection of Hakon king of Norway, promising to pay him tribute upon

certain conditions agreed on between them; and the rest followed their example in 1264. Afterwards, Iceland, together with Norway, became subject to Denmark. For a long time the care of the island was committed to a governor, who commonly went there once a-year; though, according to his instructions, he ought to have resided in Iceland. As the country suffered incredibly through the absence of its governors, it was resolved a few years ago that they should reside there, and have their seat at Besslstedt, one of the old royal domains. He has under him a bailiff, two laymen, a sheriff, and 21 *sysselmenn*, or magistrates who superintend small districts; and almost every thing is decided according to the laws of Denmark.

At the first settlement of the Norwegians in Iceland, ⁷ *Manners*, they lived in the same manner as they had done in their own country, namely, by war and piracy. Their situation with regard to the kings of Norway, however, soon obliged them to apply to other states, in order to learn as much of the knowledge of government and politics as was necessary to preserve their colony from subjugation to a foreign yoke. For this purpose they often sailed to Norway, Denmark, Sweden, England, and Scotland. The travellers, at their return, were obliged to give an account to their chiefs of the state of those kingdoms through which they passed. For this reason, history, and what related to science, was held in high repute as long as the republican form of government lasted; and the great number of histories to be met with in the country, show at least the desire of the Icelanders to be instructed. To secure themselves, therefore, against their powerful neighbours, they were obliged to enlarge their historical knowledge. They likewise took great pains in studying perfectly their own laws, for the maintenance and protection of their internal security. Thus Iceland, at a time when ignorance and obscurity overwhelmed the rest of Europe, was enabled to produce a considerable number of poets and historians. When the Christian religion was introduced about the end of the 10th century, more were found conversant in the law than could have been expected, considering the extent of the country, and the number of its inhabitants. Fishing was followed among them; but they devoted their attention considerably more to agriculture, which has since entirely ceased.

Two things have principally contributed towards producing a great change both in their character and way of life, viz. the progress of the Christian religion, and their subjection first to Norway, and afterwards to Denmark. For if religion, on one side, commanded them to desist from their ravages and warlike expeditions; the secular power, on the other, deprived them of the necessary forces for the execution of them: and, since this time, we find no farther traces of their heroic deeds, except those which are preserved in their histories.

The modern Icelanders apply themselves to fishing and breeding of cattle. They are middle-sized and well-made, though not very strong; and the women are in general ill-featured. Vices are much less common among them, than in other parts where luxury and riches have corrupted the morals of the people. Though their poverty disables them from imitating the

Iceland.

the hospitality of their ancestors in all respects, yet they continue to show their inclination to it: they cheerfully give away the little they have to spare, and express the utmost joy and satisfaction if you are pleased with their gift. They are uncommonly obliging and faithful, and extremely attached to government. They are very zealous in their religion. An Icelander never passes a river or any other dangerous place, without previously taking off his hat, and imploring the divine protection; and he is always thankful for the protection of the Deity when he has passed the danger in safety. They have an inexpressible attachment to their native country, and are nowhere so happy. An Icelander therefore rarely settles in Copenhagen, though ever such advantageous terms should be offered him. On the other hand, we cannot ascribe any great industry or ingenuity to these people. They work on in the way to which they have all along been accustomed, without thinking of improvements. They are not cheerful in conversation, but simple and credulous; and have no aversion against a bottle, if they can find an opportunity. When they meet together, their chief pastime consists in reading their history. The master of the house makes the beginning, and the rest continue in their turns when he is tired. Some of them know these stories by heart; others have them in print, and others in writing. Besides this, they are great players at chess and cards, but only for their amusement, since they never play for money: which, however, seems to have been formerly in use among them; since, by one of their old laws, a fine is imposed upon those who play for money.

Their dress.

The modern Icelanders have made very little alteration in their dress from what was formerly in use. The men all wear a linen shirt next to the skin, with a short jacket, and a pair of wide breeches over it. When they travel, another short coat is put over all. The whole is made of coarse black cloth, called *wadmal*; but some wear clothes of a white colour. On their head they wear large three-cornered hats, and on their feet Iceland shoes and worsted stockings. Some of them indeed have shoes from Copenhagen; but, as they are rather too dear for them, they generally make their own shoes, sometimes of the hide of oxen, but more frequently of sheep's leather. They make them by cutting a square piece of leather, rather wider than the length of the foot; this they sew up at the toes and behind at the heel, and tie it on with leather thongs. These shoes are convenient enough where the country is level; but it would be very difficult for us who are not accustomed to walk with them amongst the rocks and stones, though the Icelanders do it with great ease.

The women are likewise dressed in black wadmal. They wear a bodice over their shifts, which are sewed up at the bosom; and above this a jacket laced before with long narrow sleeves reaching down to the wrists. In the opening on the side of the sleeve, they have buttons of chased silver, with a plate fixed to each button; on which the lover, when he buys them in order to present them to his mistress, takes care to have his name engraved along with hers. At the top of the jacket a little black collar is fixed, of about three inches broad, of velvet or silk, and frequently trimmed with gold cord. The petticoat is likewise of

wadmal, and reaches down to the ankles. Round the top of it is a girdle of silver or some other metal, to which they fasten the apron, which is also of wadmal, and ornamented at top with buttons of chased silver. Over all this they wear an upper-dress nearly resembling that of the Swedish peasants; with this difference, that it is wider at bottom: this is close at the neck and wrists, and a hand's-breadth shorter than the petticoat. It is adorned with a facing down to the bottom, which looks like cut velvet, and is generally worn by the Icelandic women. On their fingers they wear gold, silver, or brass rings. Their head-dress consists of several cloths wrapped round the head almost as high again as the face. It is tied fast with a handkerchief, and serves more for warmth than ornament. Girls are not allowed to wear this head-dress till they are marriageable. At their weddings they are adorned in a very particular manner: the bride wears, close to the face, round her head-dress, a crown of silver gilt. She has two chains round her neck, one of which hangs down very low before, and the other rests on her shoulders. Besides these, she wears a lesser chain, from whence generally hangs a little heart, which may be opened to put some kind of perfume in it. This dress is worn by all the Icelandic women without exception: only with this difference, that the poorer sort have it of coarse wadmal, with ornaments of brass; and those that are in easier circumstances have it of broad cloth, with silver ornaments gilt.

The houses of the Icelanders are very indifferent, but the work is said to be on the south side of the island. In some parts they are built of drift-wood, in others of lava, almost in the same manner as the stone-walls we make for inclosures, with moss stuffed between the pieces of lava. In some houses the walls are wainscotted on the inside. The roof is covered with sods, laid over rafting, or sometimes over the ribs of whales; the walls are about three yards high, and the entrance somewhat lower. Instead of glass, the windows are made of the chorion and amnios of sheep, or the membranes which surround the womb of the ewe. These are stretched on a hoop, and laid over a hole in the roof. In the poorer sort of houses they employ for the windows the inner membrane of the stomach of animals, which is less transparent than the others.

As the island of Iceland produces no kind of grain, the inhabitants of consequence have no bread but what is imported; and which being too dear for common use, is reserved for weddings and other entertainments. The following list of their viands is taken from Troil's Letters.

" 1. Flour of *salgras*, (lichen islandicus, or rock-grass). The plant is first washed, and then cut into small pieces by some; though the greater number dry it by fire or in the sun, then put it into a bag in which it is well beaten, and lastly work it into a flour by stamping.

" 2. Flour of *kompjerg*, (polygonum bistorta), is prepared in the same manner, as well as the two other sorts of wild corn *melur* (*Arundo arenaria*, and *Arundo foliorum lateribus convolutis*), by separating it from the chaff, pounding, and lastly grinding it.

" 3. *Surt smor*, (sour butter). The Icelanders seldom make use of fresh or salt butter, but let it grow

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sour

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^{Iceland.} four before they eat it. In this manner it may be kept for 20 years, or even longer; and the Icelanders look upon it as more wholesome and palatable than the butter used among other nations. It is reckoned better the older it grows; and one pound of it then is valued as much as two of fresh butter.

" 3. *String*, or whey boiled to the consistence of four milk, and preserved for the winter.

" 4. Fish of all kinds, both dried in the sun and in the air, and either salted or frozen. Those prepared in the last manner are preferred by many.

" 5. The flesh of bears, sheep, and birds, which is partly salted, partly hung or smoked, and some preserved in casks with sour or fermented whey poured over it.

" 6. *Misfi*, or whey boiled to cheese, which is very good. But the art of making other kinds of good cheese is lost, though some tolerably palatable is sold in the east quarter of Iceland.

" 7. *Beina-string*, bones and cartilages of beef and mutton, and likewise bones of cod, boiled in whey till they are quite dissolved; they are then left to ferment, and are eat with milk.

" 8. *Skyr*. The curds from which the whey is squeezed are preserved in casks or other vessels; they are sometimes mixed with black crow-berries or juniper-berries, and are likewise eat with new milk.

" 9. *Syra*, is sour whey kept in casks, and left to ferment; which, however, is not reckoned fit for use till a year old.

" 10. *Blanda*, is a liquor made of water, to which a twelfth part of syra is added. In winter, it is mixed with the juice of thyme and of the black crow-berries.

" 11. They likewise eat many vegetables, some of which grow wild, and some are cultivated; also shell-fish and mushrooms."

The Icelanders in general eat three meals a-day, at seven in the morning, two in the afternoon, and nine at night. In the morning and evening they commonly eat curds mixed with new milk, and sometimes with juniper or crow berries. In some parts, they also have pottage made of rock-grass, which is very palatable, or curdled milk boiled till it becomes of a red colour, or new milk boiled a long time. At dinner, their food consists of dried fish, with plenty of sour butter; they also sometimes eat fresh fish, and, when possible, a little bread and cheese with them. It is reported by some, that they do not eat any fish till it is quite rotten; this report perhaps proceeds from their being fond of it when a little tainted: they however frequently eat fish which is quite fresh, though, in the same manner as the rest of their food, often without salt.

Their common beverage is milk, either warm from the cow or goat, and sometimes boiled: they likewise use butter-milk with or without water. On the coasts they generally drink blanda and sour milk; which is sold after it is skimmed at two-fifths of a rixdollar per cask: some likewise send for beer from Copenhagen, and some brew their own. A few of the principal inhabitants also have claret and coffee. The common people sometimes drink a kind of tea, which they make from the leaves of the *dryas octopetala*, and the *varonica officinalis*.

On the coasts the men employ themselves in fishing, both summer and winter. On their return home, when they have drawn and cleaned their fish, they give them to their wives, whose care it is to dry them. In the winter, when the inclemency of the weather prevents them from fishing, they are obliged to take care of their cattle, and spin wool. In summer, they mow the grass, dig turf, provide fuel, go in search of sheep and goats that were gone astray, and kill cattle. They prepare leather with the *spiraea ulmaria* instead of bark. Some few work in gold and silver; and others are instructed in mechanics, in which they are tolerable proficient. The women prepare the fish, take care of the cattle, manage the milk and wool, sew, spin, and gather eggs and down. When they work in the evening, they use, instead of an hour-glass, a lamp with a wick made of epilobium dipt in train oil, which is contrived to burn four, six, or eight hours.

Among the common people of Iceland, time is not reckoned by the course of the sun, but by the work they have done, and which is prescribed by law. According to this prescription, a man is to mow as much hay in one day as grows on 30 fathoms of manured soil, or 40 fathoms of land which has not been manured; or he is to dig 700 pieces of turf eight feet long and three broad. If as much snow falls as reaches to the horses bellies, a man is required daily to clear a piece of ground sufficient for 100 sheep. A woman is to rake together as much hay as three men can mow, or to weave three yards of wadmal a-day.

The wages of a man are fixed at four dollars and 12 yards of wadmal; and those of a woman at two dollars and five yards of wadmal. When men are sent a-fishing out of the country, there is allowed to each man, by law, from the 25th of September to the 14th of May, six pounds of butter, and 18 pounds of dried fish every week. This may seem to be too great an allowance; but it must be remembered that they have nothing else to live upon. When they are at home, and can get milk, &c. every man receives only five pounds of dried fish and three quarters of a pound of butter a-week.

The food and manner of life of the Icelanders by no means contribute to their longevity. It is very rare indeed to see an inhabitant of Iceland exceed the age of 50 or 60; and the greater part are attacked by grievous diseases before middle age. Of these the scurvy and elephantiasis or leprosy are the worst. They are also subject to the gout in their hands, owing to their frequent employment in fishing, and handling the wet fishing-tackle in cold weather. St Anthony's fire, the jaundice, pleurisy, and lowness of spirits, are frequent complaints in this country. The small-pox also is exceedingly fatal, and not long ago destroyed 16,000 persons. By these diseases, and the frequent famines with which the country has been afflicted, the inhabitants are reduced to a much smaller number than they formerly were, inasmuch that it is computed they do not in all exceed 60,000.

The exports of Iceland consist of dried fish, salted mutton and lamb, beef, butter, tallow, train-oil, and coarse woollen cloth, stockings, gloves, raw wool, sheep-skins, lamb-skins, fox-furs of various colours, eider down, feathers, and formerly sulphur; but there is

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no longer a demand for this mineral. On the other hand, the Icelanders import timber, fishing-lines and hooks, tobacco, bread, horse-shoes, brandy, wine, salt, linen, a little silk, and a few other necessities, as well as superfluities for the better sort. The whole trade of Iceland is engrossed by a monopoly of Danes, indulged with an exclusive charter. This company maintains factories at all the harbours of Iceland, where they exchange their foreign goods for the merchandize of the country; and as the balance is in favour of the Icelanders, pay the overplus in Danish money, which is the only current coin in this island. All their accounts and payments are adjusted according to the number of fish: two pounds of fish are worth two skillings in specie, and 48 fish amount to one rixdollar. A Danish crown is computed at 30 fish: what falls under the value of 12 fish cannot be paid in money; but must be bartered either for fish or roll-tobacco, an ell of which is equal to one fish. The weights and measures of the Icelanders are nearly the same with those used in Denmark. The Icelanders being neither numerous nor warlike, and altogether unprovided with arms, ammunition, garrisons, or fleets, are in no condition to defend themselves from invasion, but depend entirely on the protection of his Danish majesty, to whom they are subject. The revenues which he draws from this island consist of the income of divers estates, as royal demesne, amounting to about 8000 dollars per annum; of the money paid by the company for an exclusive trade, to the value of 20,000 dollars; and of a fixed proportion in the tythes of fish paid in some particular districts.

74
Volcanoes
of Iceland.

Iceland is noted for the volcanoes with which it abounds, as already mentioned, and which seem to be more furious than any yet discovered in the other parts of the globe. Indeed, from the latest accounts, it would seem that this miserable country were little other than one continued volcano. Mount Hecla has been commonly supposed to be the only burning mountain, or at least the principal one, in the island: (see HECLA). It has indeed been more taken notice of than many others of as great extent, partly from its having had more frequent eruptions than any single one, and partly from its situation, which exposes it to the sight of ships sailing to Greenland and North America. But in a list of eruptions published in the appendix to Pennant's Arctic Zoology, it appears, that out of 51 remarkable ones, only one third have proceeded from Hecla, the other mountains it seems being no less active in the work of destruction than this celebrated one. These eruptions take place in the mountains covered with ice, which the inhabitants call *Jokul*. Some of these, as appears from a large map of Iceland made by order of his Danish Majesty in 1734, have been swallowed up. Probably the great lakes met with in this country may have been occasioned by the sinking of such mountains, as several instances of a similar nature are to be met with in other parts of the world. The great Icelandic lake called *Myvatn* may probably have been one. Its bottom is entirely formed of lava, divided by deep cracks, which shelter during winter the great quantity of trout which inhabit this lake. It is now only 30 feet deep; but originally was much deeper; being nearly filled up in the year 1728, by an eruption of the great mountain

Krafle. The fiery stream took its course towards *Myvatn*, and ran into it with an horrid noise, which continued till the year 1730.

"The mountains of Iceland (says Mr Pennant) are of two kinds, primitive and posterior. The former consist of strata usually regular, but sometimes confused. They are formed of different sorts of stone without the least appearance of fire. Some are composed of sand and free-stone, petrosilex or chert, slaty or fissile stone, and various kinds of earth or bole, and steatite; different sorts of breccia or conglutinated stones; jaspers of different kinds, Iceland crystal; the common rhomboid spathum, chalcedonies stratified, and botryoid; zeolites of the most elegant kinds; crystals, and various other substances that have no relation to volcanoes. These primitive mountains are those called *Jokul*, and are higher than the others. One of them, called *Esjan* or *Rias*, is 6000 feet high. It seems to be composed of great and irregular rocks of a dark grey colour, piled on each other. Another, called *Ennberg*, is about 3000 feet high; the *Snæfeld Jokul*, 2287 yards; the *Snæfeldnas* or promontory of *Snæfeld* is from 300 to 400 fathoms. *Hornstrand* or the coast by the north Cape Nord is very high, from 300 to 400 fathoms. The rocks of *Drango* are seven in number, of a pyramidal figure, rising out of the sea at a small distance from the cliffs, four of which are of a vast height, and have a most magnificent appearance.

"Eastward from the *Snæfeld* begins the *Eisberge*, soaring to a vast height; many parts of which have felt the effects of fire, and in some of the melted rocks are large cavities. *Budda-lektur*, a rock at one end of this mountain, is also volcanic, and has in it a great cavern hung with *stalactite*. The name of *Solvabamar* is given to a tremendous range of volcanic rocks, composed entirely of flags, and covered in the season with sea-fowl. It would be endless, however, to mention all the places which bear the marks of fire in various forms, either by having been vitrified, changed into a fiery colour, ragged and black, or bear the marks of having run for miles in a sloping course towards the sea."

These volcanoes, though so dreadful in their effects, seldom begin to throw out fire without giving warning. A subterraneous rumbling noise heard at a considerable distance, as in other volcanoes, precedes the eruption for several days, with a roaring and cracking in the place from whence the fire is about to burst forth; many fiery meteors are observed, but generally unattended with any violent concussion of the earth, though sometimes earthquakes, of which several instances are recorded, have accompanied these dreadful conflagrations. The drying up of small lakes, streams, and rivulets, is also considered as a sign of an impending eruption; and it is thought to hasten the eruption when a mountain is so covered with ice, that the holes are stopped up through which the exhalations formerly found a free passage. The immediate sign is the bursting of the mass of ice with a dreadful noise; flames then issue forth from the earth, and lightning; and fire balls from the smoke; stones, ashes, &c. are thrown out to vast distances. Egbert Olafsen relates, that, in an eruption of *Kattle glas* in 1755, a stone weighing 290 pounds was thrown to the distance of 24 English miles. A quantity of white pumice stone is thrown

Iceland. thrown up by the boiling waters; and it is conjectured with great probability, that the latter proceeds from the sea, as a quantity of salt, sufficient to load several horses, has frequently been found after the mountain has ceased to burn.

To enumerate the ravages of so many dreadful volcanoes, which from time immemorial have contributed to render this dreary country still less habitable than it is from the climate, would greatly exceed our limits. It will be sufficient to give an account of that which happened in 1783, and which from its violence seems to have been unparalleled in history.

15
The country almost
desolated
by an eruption in
1783.

Its first signs were observed on the 1st of June by a trembling of the earth in the western part of the province of *Shapterfall*. It increased gradually to the 11th, and became at last so great that the inhabitants quitted their houses, and lay at night in tents on the ground. A continual smoke or steam was perceived rising out of the earth in the northern and uninhabited parts of the country. Three *fire-spouts*, as they were called, broke out in different places, one in *Ulfarsdal*, a little to the east of the river *Skapta*; the other two were a little to the westward of the river called *Ilverfisflot*. The river *Skapta* takes its rise in the northeast, and running first westward, it turns to the south, and falls into the sea in a southeast direction. Part of its channel is confined for about 24 English miles in length, and is in some places 200 fathoms deep, in others 100 or 150, and its breadth in some places 100, 50, or 40 fathoms. Along the whole of this part of its course the river is very rapid, though there are no considerable cataracts or falls. There are several other such confined channels in the country, but this is the most considerable.

The three fire-spouts, or streams of lava, which had broke out, united into one, after having risen a considerable height into the air, arriving at last at such an amazing altitude as to be seen at the distance of more than 200 English miles; the whole country, for double that distance, being covered with a smoke or steam not to be described.

On the 8th of June this fire first became visible. Vast quantities of sand, ashes, and other volcanic matters were ejected, and scattered over the country by the wind, which at that time was very high. The atmosphere was filled with sand, brimstone, and ashes, in such a manner as to occasion continual darkness; and considerable damage was done by the pumice stones which fell, red hot, in great quantities. Along with these a tenacious substance like pitch fell in vast quantity; sometimes rolled up like balls, at other times like rings or garlands, which proved no less destructive to vegetation than the other. This shower having continued for three days, the fire became very visible, and at last arrived at the amazing height already mentioned. Sometimes it appeared in a continued stream, at others in flashes or flames seen at the distance of 30 or 40 Danish miles (180 or 240 of ours), with a continual noise like thunder, which lasted the whole summer.

The same day that the fire broke out there fell a vast quantity of rain, which running in streams on the hot ground tore it up in large quantities, and brought it down upon the lower lands. This rain-water was much impregnated with acid and other salts, so as to be

highly corrosive, and occasion a painful sensation when it fell on the hands or face. At a greater distance from the fire the air was excessively cold. Snow lay upon the ground three feet deep in some places; and in others there fell great quantities of hail, which did very much damage to the cattle and every thing without doors. Thus the grass and every kind of vegetation in those places nearest the fire was destroyed, being covered with a thick crust of sulphureous and sooty matter. Such a quantity of vapour was raised by the contest of the two adverse elements, that the sun was darkened and appeared like blood, the whole face of nature seeming to be changed; and this obscurity seems to have reached as far as the island of Britain; for during the whole summer of 1783, an obscurity reigned throughout all parts of this island; the atmosphere appearing to be covered with a continual haze, which prevented the sun from appearing with his usual splendor.

The dreadful scene above described lasted in Iceland for several days; the whole country was laid waste, and the inhabitants fled every where to the remotest parts of their miserable country, to seek for safety from the fury of this unparalleled tempest.

On the first breaking out of the fire, the river *Skapta* was considerably augmented, on the east side of which one of the fire spouts was situated; and a similar overflow of water was observed at the same time in the great river *Piorfa*, which runs into the sea a little to the eastward of a town called *Orrebakka*, and into which another river called *Tuna*, after having run through a large tract of barren and uncultivated land, empties itself. But on the 11th of June the waters of the *Skapta* were lessened, and in less than 24 hours totally dried up. The day following, a prodigious stream of liquid and red-hot lava, which the fire-spout had discharged, ran down the channel of the river. This burning torrent not only filled up the deep channel above mentioned, but, overflowing the banks of it, spread itself over the whole valley, covering all the low grounds in its neighbourhood; and not having any sufficient outlet to empty itself by, it rose to a vast height, so that the whole adjacent country was overflowed, insinuating itself between the hills, and covering some of the lower ones. The hills here are not continued in a long chain or series, but are separated from one another, and detached, and between them run little rivulets or brooks; so that, besides filling up the whole valley in which the river *Skapta* ran, the fiery stream spread itself for a considerable distance on each side, getting vent between the above mentioned hills, and laying all the neighbouring country under fire.

The spouts still continuing to supply fresh quantities of inflamed matter, the lava took its course up the channel of the river, overflowing all the grounds above, as it had done those below the place whence it issued. The river was dried up before it, until at last it was stopped by the hill whence the *Skapta* takes its rise. Finding now no proper outlet, it rose to a prodigious height, and overflowed the village of *Buland*, consuming the houses, church, and every thing that stood in its way; though the high ground on which this village stood seemed to ensure it from any danger of this kind.

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Iceland.

The fiery lake still increasing, spread itself out in length and breadth for about 36 English miles; and having converted all this tract of land into a sea of fire, it stretched itself towards the south, and getting vent again by the river Skapta rushed down its channel with great impetuosity. It was still confined between the narrow banks of that river for about six miles (English); but coming at last into a more open place, it poured forth in prodigious torrents with amazing velocity and force; spreading itself now towards the south, tearing up the earth, and carrying on its surface flaming woods and whatsoever it met with. In its course it laid waste another large district of land. The ground where it came was cracked, and sent forth great quantities of steam long before the fire reached it; and every thing near the lake was either burnt up or reduced to a fluid state. In this situation matters remained from the 12th of June to the 13th of August; after which the fiery lake no longer spread itself, but nevertheless continued to burn; and when any part of the surface acquired a crust by cooling, it was quickly broken by the fire from below; and this tumbling down among the melted substance, was rolled and tossed about with prodigious noise and crackling; and in many parts of its surface, small spouts or at least ebullitions were formed, which continued for some length of time.

In other directions this dreadful inundation proved no less destructive. Having run through the narrow part of the channel of Skapta as early as the 12th of June, it stretched out itself towards the west and south-west, overflowing all the flat country, and its edge being no less than 70 fathoms high at the time it got out of the channel of the river. Continuing its destructive course, it overflowed a number of villages, running in every direction where it could find a vent. In one place it came to a great cataract of the river Skapta, about 14 fathoms in height, over which it was precipitated with tremendous noise, and thrown in great quantities to a very considerable distance. In another place it stopped up the channel of a large river, filled a great valley, and destroying two villages by approaching only within 100 fathoms of them. Others were overflowed by inundations of water proceeding from the rivers which had been stopped in their courses; until at last all the passages on the south, east, and west, being stopped, and the spouts still sending up incredible quantities of fresh lava, it burst out to the north and northeast, spreading over a tract of land 48 miles long and 36 broad. Here it dried up the rivers Tuna and Anafyrði; but even this vast effusion being insufficient to exhaust the subterraneous resources of liquid fire, a new branch took its course for about eight miles down the channel of the river Hverfussil, when coming again to an open country, it formed what our author calls a small lake of fire, about twelve miles in length and six in breadth. At last, however, this branch also stopped on the 16th of August; the fiery fountains ceased to pour forth new supplies, and this most astonishing eruption came to a period.

The whole extent of ground covered by this dreadful inundation was computed at no less than 90 miles long and 42 in breadth; the depth of the lava being from 16 to 20 fathoms. Twelve rivers were dried up, 20 or 21 villages were destroyed, and 224 people lost

their lives. The extent above mentioned, however, is that only on the south, east, and west; for that towards the north being over uninhabited land, where no body cared to venture themselves, was not exactly known. Some hills were covered by this lava; others were melted down by its heat; so that the whole had the appearance of a sea of red-hot and melted metal.

After this eruption two new islands were thrown up from the bottom of the sea. One, about three miles in circumference, and about a mile in height, made its appearance in the month of February 1784, where there was formerly 100 fathoms water. It was about 100 miles south-west from Iceland, and 48 from a cluster of small islands called *Gierfugla*. It continued for some time to burn with great violence, sending forth prodigious quantities of pumice stones, sand, &c. like other volcanoes. The other lay to the north-west, between Iceland and Greenland. It burnt day and night without intermission for a considerable time; and was also very high, and larger than the former. Since that time, however, one or both of these islands have been swallowed up.

All the time of this great eruption, and for a considerable time after, the whole atmosphere was loaded with smoke, steam, and sulphureous vapours. The sun was sometimes wholly invisible; and when it could be seen was of a reddish colour. Most of the fisheries were destroyed; the banks where the fish used to resort being so changed, that the fishermen could not know them again; and the smoke was so thick, that they could not go far out to sea. The rain water, falling through this smoke and steam, was so impregnated with salt and sulphureous matter, that the hair and even the skin of the cattle were destroyed; and the whole grass of the island was so covered with soot and pitchy matter, that what had escaped the destructive effects of the fire became poisonous; so that the cattle died for want of food, or perished by eating those unwholesome vegetables. Nor were the inhabitants in a much better situation; many of them having lost their lives by the poisonous qualities of the smoke and steam with which the whole atmosphere was filled; particularly old people, and such as had any complaint in the breast and lungs.

Before the fire broke out in Iceland, there is said to have been a very remarkable eruption in the uninhabited parts of Greenland; and that in the northern parts of Norway, opposite to Greenland, the fire was visible for a long time. It was also related, that when the wind was in the north, a great quantity of ashes, pumice, and brimstone, fell upon the north and west coasts of Iceland, which continued for the whole summer whenever the wind was in that quarter; and the air was always very much impregnated with a thick smoke and sulphureous smell.

During the fall of the sharp rain formerly mentioned, there was observed at Trondheim, and other places in Norway, and likewise at Faw, an uncommon fall of sharp and salt rain, which totally destroyed the leaves of the trees, and every vegetable it fell upon, by scorching them up, and causing them to wither. A considerable quantity of ashes, sand, and other volcanic matters, fell at Faro, which covered the whole surface of the ground whenever the wind blew from Iceland, though the distance between the two places is not less,

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less than 480 miles. Ships that were sailing betwixt Copenhagen and Norway were frequently covered with ashes and sulphureous matter, which stuck to the masts, sails, and decks, besmearing them all over with a black and pitchy substance. In many parts of Holland, Germany, and other northern countries, a sulphureous vapour was observed in the air, accompanied with a thick smoke, and in some places a light grey-coloured substance fell upon the earth every night; which, by yielding a bluish flame when thrown into the fire, evidently showed its sulphureous nature. On those nights in which this substance fell in any quantity, there was little or no dew observed. These appearances continued, more or less, all the months of July, August, and September.

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Vhorkelyn's account of the ancient state of this island.

Some curious particulars relative to the ancient state of this island have lately been published by a Mr Vhorkelyn, a native of the country. From his work it appears that Iceland, for a very considerable space of time, viz. from the beginning of the 10th to the middle of the 13th century, was under a republican form of government. At first the father, or head of every family, was an absolute sovereign; but in the progress of population and improvement, it became necessary to form certain regulations for the settlement of disputes concerning the frontiers of different estates. For this purpose the heads of the families concerned assembled themselves, and formed the outlines of a republic. In the mean time they carried on a prosperous trade to different parts; sending ships even to the Levant, and to Constantinople, at that time celebrated as the only seat of literature and humanity in the world. Deputies were likewise sent from this island over land to that capital, for the improvement of their laws and civilization; and this a whole century before the first crusade. In these ancient Icelandic laws, therefore, we meet with evident traces of those of the Greeks and Romans. For example, besides a body of written laws which were written every third year to the people, they had two men chosen annually by the heads of families, with consular power, not only to enforce the laws then in being, but when these proved deficient, to act as necessity required.

These laws do not appear to have inflicted capital punishments upon any person. Murderers were banished to the *wood*; that is, to the interior and uncultivated parts of the island; where no person was allowed to approach them within a certain number of fathoms. In cases of banishment for lesser crimes, the friends of the offender were allowed to supply him with necessaries. The culprit, however, might be killed by any person who found him without his bounds; and he might even be hunted and destroyed in his sanctuary, provided he did not withdraw himself from the island within a twelvemonth after his sentence, which it was supposed he might accomplish by means of the annual arrival and departure of ships. Every man's person was free until he had forfeited his rights by some crime against society; and so great was their respect for independence, that great indulgence was allowed for the power of passion. If any provoking word or behaviour had been used, no punishment was inflicted on the party who resented it, even though he should have killed his adversary.

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By the laws of Iceland, the poor were committed to the protection of their nearest kindred, who had a right to their labour as far as they were able to work, and afterwards to indemnification if the poor person should acquire any property. Children were obliged to maintain their parents in their old age; but if the latter had neglected to give them good education, they were absolved from this duty.

While the republic of Iceland continued free and independent, ships were sent from the island to all parts of the world. Till very lately, however, not a ship belonged to it, the little commerce it enjoyed being monopolized by a Danish company, until in 1786 it was laid open to all the subjects of Denmark. "There is at present (says Mr Pennant *) a revival of the cod fishery on the coast of Iceland from our kingdom. About a dozen of vessels have of late sailed from the isle of Thanet, and a few from other parts of Great Britain. They are either sloops or brigs from 50 to 80 tons burden. A lug-sail boat, such as is used in the herring-fishery, sailed last season from Yarmouth thus equipped. The crew consisted of five men from the town, and five more taken in at the Orkneys. They had twelve lines of 120 fathoms each, and 200 or 300 hooks; six heading knives, twelve gutting and twelve splitting knives. They take in 18 tons of salt at Leith, at the rate of three tons to every thousand fish; of which six or seven thousand is a load for a vessel of this kind. They go to sea about the middle of April; return by the Orkneys to land the men; and get into their port in the latter end of August or beginning of September. Pytheas says, that Iceland lies six days sailing from Great Britain. A vessel from Yarmouth was, in the last year, exactly that time in its voyage from the Orkneys to Iceland. With a fair wind it might be performed in far less time; but the winds about the Ferroe isles are generally changeable."

ICELAND Agate; a kind of precious stone met with in the islands of Iceland and Ascension, employed by the jewellers as an agate, though too soft for the purpose. It is supposed to be a volcanic product; being solid, black, and of a glassy texture. When held between the eye and the light, it is semitransparent and greenish like the glass bottles which contain much iron. In the islands which produce it, such large pieces are met with that they cannot be equalled in any glass-house.

ICELAND (or Island) Crystal. See CRYSTAL (*Iceland*).

ICENI, the ancient name of the people of Suffolk, Norfolk, Cambridgeshire, and Huntingdonshire, in England.

ICH-DIEN. See HERALDRY, chap. iv. sect. 2.

ICHNEUMON in zoology. See VIVERRA.

ICHNEUMON, is also the name of a genus of flies of the hymenoptera order. The mouth is armed with jaws, without any tongue; the antennæ have above 30 joints; the abdomen is generally petiolated, joined to the body by a pedicle or stalk; the tail is armed with a sting, which is inclosed in a double-valved cylindrical sheath; the wings are lanceolated and plain. This genus is exceedingly numerous. In Gmelin's or the 13th edit. of the *Système Nature*, no fewer than 415 species are enumerated. They are divided into fa-

Iceland

Ichneumon.

Appendix
to Arctis
Zoology,
p. 19.

Ichneumon. families, from the colour of their scutellum and antennæ, as follow: 1. Those with a whitish scutcheon, and antennæ annulated with a whitish band: 2. Those which have a white scutcheon, and antennæ entirely black. 3. With a scutcheon of the same colour as the thorax; the antennæ encompassed with a fillet. 4. With a scutcheon of the same colour as the thorax; and antennæ black and setaceous. 5. With setaceous clay-coloured antennæ. 6. With small filiform antennæ, and the abdomen oval and slender.

One distinguishing and striking character of these species of flies is the almost continual agitation of their antennæ. The name of *Ichneumon* has been applied to them, from the service they do us by destroying caterpillars, plant-lice, and other insects; as the ichneumon or mangouste destroys the crocodiles. The variety to be found in the species of ichneumons is prodigious: among the smaller species there are males who perform their amorous preludes in the most passionate and gallant manner. The posterior part of the females is armed with a wimble, visible in some species, no ways discoverable in others; and that instrument, though so fine, is able to penetrate through mortar and plaster: the structure of it is more easily seen in the long-wimbled fly. The food of the family to be produced by this fly is the larva of wasps or mason-bees; for it no sooner espies one of those nests, but it fixes on it with its wimble, and bores through the mortar of which it is built. The wimble itself, of an admirable structure, consists of three pieces; two collateral ones, hollowed out into a gutter, serve as a sheath, and contain a compact, solid, dentated stem, along which runs a groove that conveys the egg from the animal, who supports the wimble with its hinder legs, lest it should break, and by a variety of movements, which it dexterously performs, it bores through the building, and deposits one or more eggs, according to the size of the ichneumon, though the largest drop but one or two. Some agglutinate their eggs upon caterpillars; others penetrate through the caterpillar's eggs, though very hard, and deposit their own in the inside. When the larva is hatched, its head is so situated, that it pierces the caterpillar, and penetrates to its very entrails. These larvæ pump out the nutritious juices of the caterpillar, without attacking the vitals of the creature; who appears healthy, and even sometimes transforms itself to a chrysalis. It is not uncommon to see those caterpillars fixed upon trees, as if they were sitting upon their eggs, and it is afterwards discovered that the larvæ, which were within their bodies, have spun their threads, with which, as with cords, the caterpillars are fastened down, and so perish miserably. The ichneumons performed special service, in the years 1731 and 1732; by multiplying in the same proportion as did the caterpillars, their larvæ destroyed more of them than could be effected by human industry. Those larvæ, when on the point of turning into chrysalids, spin a silky cod. Nothing is more surprising and singular, than to see those cods leap when placed on the table or hand. Plant-lice, the larvæ of the curculiones, and spider's eggs, are also sometimes the cradle of the ichneumon-fly. Carcasses of plant-lice, void of motion, are often found on rose-tree leaves; they are the habitation of a small larva, which after having eaten up the entrails, de-

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stroys the springs and inward economy of the plant-lice, performs its metamorphosis under shelter of the pellicle which enfolds it, contrives itself a small circular outlet, and sallies forth into open air. There are ichneumons in the woods, who dare attack spiders, run them through with their sting, tear them to pieces, and thus avenge the whole nation of flies of so formidable a foe: others, destitute of wings (and those are females), deposit their eggs in spiders' nests. The ichneumon of the bedeguar, or sweet-briar sponge, and that of the rose-tree, perhaps only deposit their eggs in those places, because they find other insects on which they feed. The genus of the ichneumon-flies might with propriety be termed a race of diminutive cannibals.

ICHNOGRAPHY, in perspective, the view of any thing cut off by a plane, parallel to the horizon, just at the base of it.—The word is derived from the Greek *ἰχνο* *footstep*, and *γραφο* *I write*, as being a description of the footsteps or traces of a work.

Among painters it signifies a description of images or of ancient statues of marble and copper, of busts and semi-busts, of paintings in fresco, mosaic works, and ancient pieces of miniature.

ICHOGLANS, the grand signior's pages serving in the seraglio. These are the children of Christian parents, either taken in war, purchased, or sent in presents from the viceroys and governors of distant provinces; they are the most sprightly, beautiful, and well-made that can be met with; and are always reviewed and approved of by the grand signior himself before they are admitted into the seraglios of Pera, Constantinople, or Adrianople, being the three colleges where they are educated, or fitted for employments, according to the opinion the court entertains of them.

ICHOR, properly signifies a thin watery humour like serum; but is sometimes used for a thicker kind flowing from ulcers, called also *sanies*.

ICHTHYOCOLLA, ISINGLASS, a preparation from the fish known by the name of *bufo*. See ACCIPENSER. The word is Greek, formed of *ἰχθυς* *fish*, and *κόλλα* *glue*.—The method of making isinglass was long a secret in the hands of the Russians; but hath lately been discovered, and the following account of it published by Humphrey Jackson, Esq; in the 63d volume of the Philosophical Transactions.

“All authors who have hitherto delivered processes for making ichthyocolla, fish-glue, or isinglass, have greatly mistaken both its constituent matter and preparation.

“To prove this assertion, it may not be improper to recite what Pommet says upon the subject, as he appears to be the principal author whom the rest have copied. After describing the fish, and referring to a cut engraved from an original in his custody, he says: ‘As to the manner of making the isinglass, the sinewy parts of the fish are boiled in water till all of them be dissolved that will dissolve; then the glucy liquor is strained, and set to cool. Being cold, the fat is carefully taken off, and the liquor itself boiled to a just consistency, then cut to pieces, and made into a twist, bent in form of a crescent, as commonly sold; then hung upon a string, and carefully dried.’

“From this account, it might be rationally con-

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cluded, that every species of fish which contained gelatinous principles would yield isinglass: and this parity of reasoning seems to have given rise to the hasty conclusions of those who strenuously vouch for the extraction of isinglass from sturgeon; but as that fish is easily procurable, the negligence of ascertaining the fact by experiment seems inexcusable.

"In my first attempt to discover the constituent parts and manufacture of isinglass, relying too much upon the authority of some chemical authors whose veracity I had experienced in many other instances, I found myself constantly disappointed. Glue, not isinglass, was the result of every process; and although, in the same view, a journey to Russia proved fruitless, yet a steady perseverance in the research proved not only successful as to this object, but, in the pursuit, to discover a resinous matter plentifully procurable in the British fisheries, which has been found by ample experience to answer similar purposes. It is now no longer a secret, that our (A) lakes and rivers in North America are stocked with immense quantities of fish, said to be the same species with those in Muscovy, and yielding the finest isinglass; the fisheries whereof, under due encouragement, would doubtless supply all Europe with this valuable article.

"No artificial heat is necessary to the production of isinglass, neither is the matter dissolved for this purpose; for, as the continuity of its fibres would be destroyed by solution, the mass would become brittle in drying, and snap short asunder, which is always the case with glue, but never with isinglass. The latter, indeed, may be resolved into glue with boiling water; but its fibrous recombination would be found impracticable afterwards, and a fibrous texture is one of the most distinguishing characteristics of genuine isinglass.

"A due consideration that an imperfect solution of isinglass, called *fining* by the brewers, possessed a peculiar property of clarifying malt-liquors, induced me to attempt its analysis in cold subacid menstrua. One ounce and an half of good isinglass, steeped a few days in a gallon of stale beer, was converted into good fining, of a remarkably thick consistence: the same quantity of glue, under similar treatment, yielded only a mucilaginous liquor, resembling diluted gum-water, which, instead of clarifying beer, increased both its tenacity and turbidness, and communicated other properties in no respect corresponding with those of genuine fining. On commixing three spoonfuls of the solution of isinglass with a gallon of malt liquor, in a tall cylindrical glass, a vast number of curdly masses became presently formed, by the reciprocal attraction of the particles of isinglass and the feculencies of the beer, which, increasing in magnitude and

specific gravity, arranged themselves accordingly, and fell in a combined state to the bottom, through the well-known laws of gravitation; for, in this case, there is no elective attraction, as some have imagined, which bears the least affinity with what frequently occurs in chemical decompositions.

"If what is commercially termed *long or short stapled isinglass* be steeped a few hours in fair cold water, the entwisted membranes will expand, and reassume their original beautiful (a) hue, and, by a dexterous address, may be perfectly unfolded. By this simple operation, we find that isinglass is nothing more than certain membranous parts of fishes, divested of their native mucosity, rolled and twisted into the forms above mentioned, and dried in open air.

"The sounds, or air-bladders, of fresh water fish in general, are preferred for this purpose, as being the most transparent, flexible, delicate substances. These constitute the finest sorts of isinglass; those called *book* and *ordinary staple*, are made of the intestines, and probably of the peritonæum of the fish. The belluga yields the greatest quantity, as being the largest and most plentiful fish in the Muscovy rivers; but the sounds of all fresh-water fish yield, more or less, fine isinglass, particularly the smaller sorts, found in prodigious quantities in the Caspian Sea, and several hundred miles beyond Astracan, in the Wolga, Yaik, Don, and even as far as Siberia, where it is called *kle* or *kla* by the natives, which implies a glutinous matter; it is the basis of the Russian glue, which is preferred to all other kinds for its strength.

"The sounds, which yield the finer isinglass, consist of parallel fibres, and are easily rent longitudinally; but the ordinary sorts are found composed of double membranes, whose fibres cross each other obliquely, resembling the coats of a bladder: hence the former are more readily pervaded and divided with subacid liquors; but the latter, through a peculiar kind of interwoven texture, are with great difficulty torn asunder, and long resist the power of the same menstruum; yet, when duly resolved, are found to act with equal energy in clarifying liquors.

"Isinglass receives its different shapes in the following manner:

"The parts of which it is composed, particularly the sounds, are taken from the fish while sweet and fresh, slit open, washed from their slimy *forde*, divested of every thin membrane which envelopes the sound, and then exposed to stiffen a little in the air. In this state, they are formed into rolls about the thickness of a finger, and in length according to the intended size of the staple: a thin membrane is generally selected for the centre of the roll, round which the rest are folded alternately, and about half an inch of each extremity.

(A) As the lakes of North America lie nearly in the same latitude with the Caspian Sea, particularly lake Superior, which is said to be of greater extent, it was conjectured they might abound with the same sorts of fish; and in consequence of public advertisements distributed in various parts of North America, offering premiums for the sounds of sturgeon and other fish, for the purpose of making isinglass, several specimens of fine isinglass, the produce of fish taken in these parts, have been lately sent to England, with proper attestations as to the unlimited quantity which may be procured.

(a) If the transparent isinglass be held in certain positions to the light, it frequently exhibits beautiful prismatic colours.

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trinity of the roll is turned inwards. The due dimensions being thus obtained, the two ends of what is called *short staple* are pinned together with a small wooden peg; the middle of the roll is then pressed a little downwards, which gives it the resemblance of a heart-shape; and thus it is laid on boards, or hung up in the air to dry. The sounds, which compose the long-staple, are longer than the former; but the operator lengthens this sort at pleasure, by interfolding the ends of one or more pieces of the sound with each other. The extremities are fastened with a peg, like the former; but the middle part of the roll is bent more considerably downwards; and, in order to preserve the shape of the three obtuse angles thus formed, a piece of round stick, about a quarter of an inch diameter, is fastened in each angle with small wooden pegs, in the same manner as the ends. In this state, it is permitted to dry long enough to retain its form, when the pegs and sticks are taken out, and the drying completed; lastly, the pieces of isinglass are colligated in rows, by running packthread through the peg-holes, for convenience of package and exportation.

"The membranes of the *book* sort, being thick and refractory, will not admit a similar formation with the preceding; the pieces, therefore, after their sides are folded inwardly, are bent in the centre, in such manner that the opposite sides resemble the cover of a book, from whence its name; a peg being run across the middle, fastens the sides together, and thus it is dried like the former. This sort is interleaved, and the pegs run across the ends, the better to prevent its unfolding.

"That called *cake-isinglass* is formed of the bits and fragments of the staple sorts, put into a flat metalline pan, with a very little water, and heated just enough to make the parts cohere like a pancake when it is dried; but frequently it is overheated, and such pieces, as before observed, are useless in the business of fining. Experience has taught the consumers to reject them.

"Isinglass is best made in the summer, as frost gives it a disagreeable colour, deprives it of weight, and impairs its gelatinous principles; its fashionable forms are unnecessary, and frequently injurious to its native qualities. It is common to find oily putrid matter, and *exuvia* of insects, between the implicated membranes, which, through the inattention of the cellarman, often contaminate wines and malt-liquors in the act of clarification. These peculiar shapes might, probably, be introduced originally with a view to conceal and disguise the real substance of isinglass, and preserve the monopoly; but, as the mask is now taken off, it cannot be doubted to answer every purpose more effectually in its native state, without any subsequent manufacture whatever, especially to the principal consumers, who hence will be enabled to procure sufficient supply from the British colonies. Until this laudable end can be fully accomplished, and as a species of isinglass, more easily produceable from the marine fisheries, may probably be more immediately encouraged, it may be manufactured as follows:

"The sounds of cod and ling bear great analogy with those of the *accipenser* genus of *Lianzus* and *Ar-*

tedi; and are in general so well known as to require no particular description. The Newfoundland and Iceland fishermen split open the fish as soon as taken, and throw the back bones, with the sounds annexed, in a heap; but previous to incipient putrefaction, the sounds are cut out, washed from their slimes, and salted for use. In cutting out the sounds, the intercostal parts are left behind, which are much the best; the Iceland fishermen are so sensible of this, that they beat the bone upon a block with a thick stick, till the pockets, as they term them, come out easily, and thus preserve the sound entire. If the sounds have been cured with salt, that must be dissolved by steeping them in water before they are prepared for isinglass; the fresh sound must then be laid upon a block of wood, whose surface is a little elliptical, to the end of which a small hair-brush is nailed, and with a saw knife the membranes on each side of the sound must be scraped off. The knife is rubbed upon the brush occasionally, to clear its teeth; the pockets are cut open with scissars, and perfectly cleansed of the mucous matter with a coarse cloth; the sounds are afterwards washed a few minutes in lime-water in order to absorb their oily principle, and lastly in clear water. They are then laid upon nets to dry in the air; but if intended to resemble the foreign isinglass, the sounds of cod will only admit of that called *book*, but those of ling both shapes. The thicker the sounds are, the better the isinglass, colour excepted; but that is immaterial to the brewer, who is its chief consumer.

"This isinglass resolves into fining, like the other sorts, in subacid liquors, as stale beer, cyder, old hock, &c. and in equal quantities produces similar effects upon turbid liquors, except that it falls speedier and closer to the bottom of the vessel, as may be demonstrated in tall cylindrical glasses; but foreign isinglass retains the consistency of fining preferably in warm weather, owing to the greater tenacity of its native mucilage.

"Vegetable acids are, in every respect, best adapted to fining: the mineral acids are too corrosive, and even insalubrious, in common beverage.

"It is remarkable, that, during the conversion of isinglass into fining, the acidity of the menstruum seems greatly diminished, at least to taste; not on account of any alkaline property in the isinglass, probably, but by its enveloping the acid particles. It is likewise reducible into jelly with alkaline liquors, which indeed are solvents of all animal matters; even cold lime-water dissolves it into a pulpy *magma*. Notwithstanding this is inadmissible as fining, on account of the menstruum, it produces admirable effects in other respects: for, on commixture with compositions of plaster, lime, &c. for ornamenting walls exposed to vicissitudes of weather, it adds firmness and permanency to the cement; and if common brick mortar be worked up with this jelly, it soon becomes almost as hard as the brick itself: but, for this purpose, it is more commodiously prepared, by dissolving it in cold water, acidulated with vitriolic acid; in which case, the acid quits the jelly, and forms with the lime a *selenitic* mass, while, at the same time, the jelly being deprived in some measure of its moisture, through the formation of an indissoluble concrete amongst its parts, soon

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dries, and hardens into a firm body; whence its superior strength and durability are easily comprehended.

"It has long been a prevalent opinion, that sturgeon, on account of its cartilaginous nature, would yield great quantities of isinglass; but, on examination, no part of this fish, except the inner coat of the sound, promised the least success. This being full of *rugs*, adheres so firmly to the external membrane, which is useless, that the labour of separating them supercedes the advantage. The intestines, however, which in the larger fish extend several yards in length, being cleaned from their mucus, and dried, were found surprisingly strong and elastic, resembling cords made with the intestines of other animals, commonly called *cat-gut*, and, from some trials, promised superior advantages when applied to mechanic operations."

Isinglass is sometimes used in medicine; and may be given in a thin acrimonious state of the juices, after the same manner as the vegetable gums and mucilages, regard being had to their different disposition to putrescence.

ICHTHYOLOGY, the science of fishes, or that part of zoology which treats of fishes. See FISH.

Fishes form the fourth class of animals in the Linnean system. This class is there arranged into six orders, under three great divisions; none of which, however, include the cetaceous tribes, or the whale, dolphin, &c. these forming an order of the class MAMMALIA in the same system. See ZOOLOGY.

Classification of fishes.

Mr Pennant, in his *British Zoology*, makes a different and very judicious arrangement, by which the cetæ are restored to their proper rank. He distributes fish into three divisions, comprehending six orders. His divisions are, into *Cetaceous*, *Cartilaginous*, and *Bony*.

Div. I. *CETACEOUS Fish*; the characters of which are the following: No gills; an orifice on the top of the head, through which they breathe and eject water; a flat or horizontal tail; exemplified in Plate CCLI. (lower compartment), fig. 1. by the Beaked Whale, borrowed from Dale's Hist. Harw. 411. Tab. xiv.—This division comprehends three genera; the Whale, Cachalot, and Dolphin.

Div. II. *CARTILAGINOUS Fish*; the characters of which are: Breathing through certain apertures, generally placed on each side the neck; but in some instances beneath, in some above, and from one to seven in number on each part, except in the pipe-fish, which has only one; the muscles supported by cartilages instead of bones. Example, the Picked Dog-fish, fig. 2. a, The lateral apertures.—The genera are, the Lamprey, Skate, Shark, Fishing-frog, Sturgeon, Sun-fish, Lump-fish, Pipe-fish.

Div. III. *BONY Fish*; includes those whose muscles are supported by bones or spines, which breathe through gills covered or guarded by thin bony plates, open on the side, and dilatable by means of a certain row of bones on their lower part, each separated by a thin web; which bones are called the *radii branchioslegi*, or the *gill covering rays*. The tails of all the fish that form this division are placed in a situation perpendicular to the body; and this is an invariable character.

The great sections of the Bony Fish into *Apodal*,

Thoracic, *Jugular*, and *Abdominal*, he copies from Linnaeus: who founds this system on a comparison of the ventral fins to the feet of land-animals or reptiles; and either from the want of them, or their particular situation in respect to the other fins, establishes his sections.—In order to render them perfectly intelligible, it is necessary to refer to those several organs of movement, and some other parts, in a perfect fish, or one taken out of the three last sections. In fig. 4. (the Haddock), *a*, is the pectoral fins; *b*, ventral fins; *c*, anal fins; *d*, caudal fin, or the tail; *e*, *e*, dorsal fins; *f*, bony plates that cover the gills; *g*, branchiostegous rays and their membranes; *h*, lateral or side line.

SECT. 1. *APODAL*: The most imperfect, wanting the ventral fins; illustrated by the Conger, fig. 3. This also expresses the union of the dorsal and anal fins with the tail, as is found in some few fish.—Genera: The Eel, Wolf-fish, Launce, Morris, Sword-fish.

SECT. 2. *JUGULAR*: The ventral fins *b*, placed before the pectoral fins *a*, as in the Haddock, fig. 4.—Genera: The Dragonet, Weever, Codfish, Bleanny.

SECT. 3. *THORACIC*: The ventral fins *a*, placed beneath the pectoral fins *b*, as in the Father Lasher, fig. 5.—Genera: The Goby, Bull-head, Doree, Flounder, Gilt-head, Wrasse, Perch, Stickleback, Mackerel, Surmullet, Gurnard.

SECT. 4. *ABDOMINAL*: The ventral fins placed behind the pectoral fins, as in the Minow, fig. 6.—Genera: The Loche, Salmon, Pike, Argentine, Athérine, Mullet, Flying fish, Herring, Carp.

Naturalists observe an exceeding great degree of wisdom in the structure of fishes, and in their conformation to the element in which they are to live. Most of them have the same external form, sharp at either end, and swelling in the middle, by which they are enabled to traverse the fluid in which they reside with greater velocity and ease. This shape is in some measure imitated by men in those vessels which they design to sail with the greatest swiftness; but the progress of the swiftest sailing ship is far inferior to that of fishes. Any of the large fishes overtake a ship in full sail with the greatest ease, play round it as though it did not move at all, and can get before it at pleasure.

The chief instruments of a fish's motion have been supposed to be the fins; which in some are much more numerous than in others. A fish completely fitted for swimming with rapidity, is generally furnished with two pair of fins on the sides, and three single ones, two above, and one below. But it does not always happen that the fish which has the greatest number of fins is the swiftest swimmer. The shark is thought to be one of the swiftest fishes, and yet it has no fins on its belly; the haddock seems to be more completely fitted for motion, and yet it does not move so swiftly. It is even observable, that some fishes which have no fins at all, such as lobsters, dart forward with prodigious rapidity, by means of their tail; and the instrument of progressive motion, in all fishes, is now found to be the tail. The great use of the fins is to keep the body in *equilibrium*: and if the fins are cut off, the fish can still swim; but will turn upon its sides or its back, without being able to keep itself in an erect posture as before. If the fish desires to turn, a blow from

Shape of fishes, addition to the element in which they are to live. Most of them have the same external form, sharp at either end, and swelling in the middle, by which they are enabled to traverse the fluid in which they reside with greater velocity and ease. This shape is in some measure imitated by men in those vessels which they design to sail with the greatest swiftness; but the progress of the swiftest sailing ship is far inferior to that of fishes. Any of the large fishes overtake a ship in full sail with the greatest ease, play round it as though it did not move at all, and can get before it at pleasure.

Uses of the fins and tails of fishes.

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from the tail sends it about in an instant; but if the tail strikes both ways, then the motion is progressive.

All fishes are furnished with a slimy glutinous matter, which defends their bodies from the immediate contact of the surrounding fluid, and which likewise, in all probability, assists their motion through the water. Beneath this, in many kinds, is found a strong covering of scales, which, like a coat of mail, defends it still more powerfully; and under that, before we come to the muscular parts of the body, lies an oily substance, which also tends to preserve the requisite warmth and vigour.

Arguments for the inferiority of fishes to land animals.

By many naturalists fishes are considered as of a nature very much inferior to land animals, whether beasts or birds. Their sense of feeling, it is thought, must be very obscure on account of the scaly coat of mail in which they are wrapped up. The sense of smelling also, it is said, they can have only in a very small degree. All fishes, indeed, have one or more nostrils; and even those that have not the holes perceptible without, yet have the bones within, properly formed for smelling. But as the air is the only medium we know proper for the distribution of odours, it cannot be supposed that these animals which reside constantly in the water can be affected by them. As to tasting, they seem to make very little distinction. The palate of most fishes is hard and bony, and consequently incapable of the powers of relishing different substances; and accordingly these voracious animals have often been observed to swallow the fisherman's plummet instead of the bait. Hearing is generally thought to be totally deficient in fishes, notwithstanding the discoveries of some anatomists who pretend to have found out the bones designed for the organ of hearing in their heads. They have no voice, it is said, to communicate with each other, and consequently have no need of an organ for hearing. Sight seems to be that sense of which they are possessed in the greatest degree; and yet even this seems obscure, if we compare it with that of other animals. The eye, in almost all fishes, is covered with the same transparent skin which covers the rest of the head, and which probably serves to defend it in the water, as they are without eyelids. The globe is more depressed anteriorly, and is furnished behind with a muscle which serves to lengthen or flatten it as there is occasion. The crystalline humour, which in quadrupeds is flat, and of the shape of a button-mould, or like a very convex lens, in fishes is quite round, or sometimes oblong like an egg. Hence it is thought that fishes are extremely near sighted; and that, even in the water, they can perceive objects only at a very small distance. Hence, say they, it is evident how far fishes are below terrestrial animals in their sensations, and consequently in their enjoyments. Even their brain, which is by some supposed to be of a size with every creature's understanding, shows that fishes are very much inferior to birds in this respect.

Objections to these arguments.

Others argue differently with regard to the nature of fishes.—With respect to the sense of feeling, say they, it cannot be justly argued that fishes are deficient, merely because they are covered with scales, as it is possible these scales may be endued with as great a power of sensation as we can imagine. The sense of feeling is not properly connected with *sensibility* in any organ, more than with *hardness* in it. A similar

argument may be used with regard to smelling; for in though we do not know how smells can be propagated water, that is by no means a proof that they are not so. On the contrary, as water is found to be capable of absorbing putrid effluvia from the air, nothing is more probable than that these putrid effluvia, when mixed with the water, would affect the olfactory organs of fishes, as well as they affect ours when mixed with the air.—With regard to taste, it certainly appears, that fishes are able to distinguish their proper food from what is improper, as well as other animals. Indeed, no voracious animal seems to be endued with much sensibility in this respect; nor would it probably be consistent with that way of promiscuously devouring every creature that comes within its reach, without which these kinds of animals could not subsist.

With respect to the hearing of fishes, it is urged, that, when kept in a pond, they may be made to answer at the call of a whistle or the ringing of a bell; and they will even be terrified at any sudden and violent noise, such as thunder, the firing of guns, &c. and shrink to the bottom of the water. Among the ancients, many were of opinion that fishes had the sense of hearing, though they were by no means satisfied about the ways or passages by which they heard. Placentini afterwards discovered some bones in the head of the pike, which had very much the appearance of being organs of hearing, though he could never discover any external passages to them. Klein affirmed, from his own experiments and observations, that all fishes have the organs of hearing; and have also passages from without to these organs, though in many species they are difficult to be seen; and that even the most minute and obscure of these are capable of communicating a tremulous motion to those organs, from sounds issuing from without. This is likewise asserted by M. Geoffroy †, who gives a particular description of the organs of hearing belonging to several species. These organs are a set of little bones extremely hard, and white, like fine porcelain, which are to be found in the heads of all fishes: The external auditory passages are very small; being scarce sufficient to admit a hog's bristle; though with care they may be distinguished in almost all fishes. It can by no means be thought that the water is an improper medium of sound, seeing daily experience shows us that sounds may be conveyed not only through water, but through the most solid bodies ‡. It seems indeed very difficult to determine the matter by experiment. Mr Gouan, who kept some gold fishes in a vase, informs us, that whatever noise he made, he could neither terrify nor disturb them; he halloo'd as loud as he could, putting a piece of paper between his mouth and the water, to prevent the vibrations from affecting the surface, and the fishes still seemed insensible: but when the paper was removed, and the sound had its full effect on the water, the case was then altered, and the fishes instantly sunk to the bottom. This experiment, however, or others similar to it, cannot prove that the fishes did not hear the sounds before the paper was removed; it only shows that they were not alarmed till a sensible vibration was introduced into the water. The call of a whistle may also be supposed to affect the water in a fish-pond with a vibratory motion: but this certainly must be very obscure; and if fishes can be assembled in this manner

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6

Sense of hearing.

† Dissertation sur l'organisation des poissons, p. 97. et seq.

See Ad. confici.

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when no person is in sight, it amounts to a demonstration that they actually do hear. See *COMPARATIVE ANATOMY*, n° 167.

The arguments used against the sight of fishes are the weakest of all. Many instances which daily occur, show that fishes have a very acute sight, not only of objects in the water, but of those in the air. Their jumping out of the water in order to catch flies is an abundant proof of this; and this they will continue to do in a fine summer evening, even after it is so dark that we cannot distinguish the insects they attempt to catch.

7
Fishes cannot live without air.

Though fishes are formed for living entirely in the water, yet they cannot subsist without air. On this subject Mr Hawkbee made several experiments, which are recorded in the *Philosophical Transactions*. The fishes he employed were gudgeons; a species that are very lively in the water, and can live a considerable time out of it. Three of them were put into a glass vessel with about three pints of fresh water, which was designed as a standard to compare the others by. Into another glass, to a like quantity of water, were put three more gudgeons, and thus the water filled the glass to the very brim. Upon this he screwed down a brass-plate with a leather below, to prevent any communication between the water and the external air; and, that it might the better resemble a pond frozen over, he suffered as little air as possible to remain on the surface of the water. A third glass had the same quantity of water put into it; which, first by boiling, and then by continuing it a whole night *in vacuo*, was purged of its air as well as possible; and into this also were put three gudgeons. In about half an hour, the fishes in the water from whence the air had been exhausted, began to discover some signs of uneasiness by a more than ordinary motion in their mouths and gills. Those who had no communication with the external air, would at this time also frequently ascend to the top, and suddenly swim down again: and in this state they continued for a considerable time, without any sensible alteration. About five hours after this observation, the fishes in the exhausted water were not so active as before, upon shaking the glass which contained them. In three hours more, the included fishes lay all at the bottom of the glass with their bellies upwards; nor could they be made to shake their fins or tail by any motion given to the glass. They had a motion with their mouths, however, which showed that they were not perfectly dead. On uncovering the vessel which contained them, they revived in two or three hours, and were perfectly well next morning; at which time those in the exhausted water were also recovered. The vessel containing these last being put under the receiver of an air-pump, and the air exhausted, they all instantly died. They continued at top while the air remained exhausted, but sunk to the bottom on the admission of the atmosphere.

8
Motion of the gills of fishes analogous to our breathing.

The use of air to fishes is very difficult to be explained; and indeed their method of obtaining the supply of which they stand constantly in need, is not easily accounted for. The motion of the gills in fishes is certainly analogous to our breathing, and seems to be the operation by which they separate the air from the water. Their manner of breathing is as follows. The fish first takes a quantity of water by the mouth,

which is driven to the gills; these close, and keep the water which is swallowed from returning by the mouth, while the bony covering of the gills prevents it from going through them till the animal has drawn the proper quantity of air from it: then the bony covers open, and give it a free passage; by which means also the gills are again opened, and admit a fresh quantity of water. If the fish is prevented from the free play of its gills, it soon falls into convulsions, and dies. But though this is a pretty plausible explanation of the respiration of fishes, it remains a difficulty not easily solved what is done with this air. There seems to be no receptacle for containing it, except the air-bladder or swim; which, by the generality of modern philosophers, is destined not to answer any vital purpose, but only to enable the fish to rise or sink at pleasure.

The air-bladder is a bag filled with air, composed of the use sometimes of one, sometimes of two, and sometimes of three divisions, situated towards the back of the fish, and opening into the maw or the gullet. The use of this in raising or depressing the fish, is proved by the following experiment. A carp being put into the air-pump, and the air exhausted, the bladder is said to burst by the expansion of the air contained in it; after which, the fish can no more rise to the top, but ever afterwards crawls at the bottom. The same thing also happens when the air-bladder is pricked or wounded in such a manner as to let the air out; in these cases also the fish continues at the bottom, without a possibility of rising to the top. From this it is inferred, that the use of the air-bladder is, by swelling at the will of the animal, to increase the surface of the fish's body, and thence diminishing its specific gravity, to enable it to rise to the top of the water, and to keep there at pleasure. On the contrary, when the fish wants to descend, it is thought to contract the air-bladder; and being thus rendered specifically heavier, it descends to the bottom.

The ancients were of opinion, that the air-bladder in fishes served for some purposes essentially necessary to life; and Dr Priestley also conjectures, that the raising or depressing the fish is not the only use of these air-bladders, but that they also may serve some other purposes in the economy of fishes. There are many arguments indeed to be used on this side of the question: the most conclusive of which is, that all the cartilaginous kind of fishes want air-bladders, and yet they rise to the top or sink to the bottom of the water without any difficulty; and though most of the eel-kind have air-bladders, yet they cannot raise themselves in the water without great difficulty.

Fishes are remarkable for their longevity. "Most of the disorders incident to mankind (says Bacon) arise from the changes and alterations in the atmosphere; but fishes reside in an element little subject to change: theirs is an uniform existence; their movements are without effort, and their life without labour. Their bones, also, which are united by cartilages, admit of indefinite extension; and the different sizes of animals of the same kind, among fishes, is very various. They still keep growing: their bodies, instead of suffering the rigidity of age, which is the cause of the natural decay of land-animals, still continue increasing with fresh supplies; and as the body grows, the conduits of

10
Longevity of fishes.

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11
Methods of determining their age.

of life furnish their stores in greater abundance. How long a fish, that seems to have scarce any bounds put to its growth, continues to live, is not ascertained; perhaps the life of a man would not be sufficient to measure that of the smallest."—There have been two methods fallen upon for determining the age of fishes; the one is by the circles of the scales, the other by the transverse section of the back bone. When a fish's scale is examined by a microscope, it is found to consist of a number of circles one within another, in some measure resembling those which appear on the transverse section of a tree, and is supposed to give the same information. For, as in trees, we can tell their age by the number of their circles; so, in fishes, we can tell theirs by the number of circles in every scale, reckoning one ring for every year of the animal's existence.—The age of fishes that want scales may be known by the other method, namely, by separating the joints of the back-bone, and then minutely observing the number of rings which the surface, where it was joined, exhibits.

12
Extreme voracity of fishes.

Fishes are, in general, the most voracious animals in nature. In most of them, the maw is placed next the mouth; and, though possessed of no sensible heat, is endowed with a very surprising faculty of digestion. Its digestive power seems, in some measure, to increase in proportion to the quantity of food with which the fish is supplied. A single pike has been known to devour 100 roaches in three days. Whatever is possessed of life, seems to be the most desirable prey for fishes. Some that have very small mouths, feed upon worms, and the spawn of other fish: others, whose mouths are larger, seek larger prey; it matters not of what kind, whether of their own species, or any other. Those with the largest mouths pursue almost every thing that hath life; and often meeting each other in fierce opposition, the fish with the largest swallow comes off with the victory, and devours its antagonist.—As a counterbalance to this great voracity, however, fishes are incredibly prolific. Some bring forth their young alive, others produce only eggs: the former are rather the least fruitful; yet even these produce in great abundance. The viviparous blenny, for instance, brings forth 200 or 300 at a time. Those which produce eggs, which they are obliged to leave to chance, either on the bottom where the water is shallow, or floating on the surface where it is deeper, are all much more prolific, and seem to proportion their stock to the danger there is of consumption.—Lewenhoeck assures us, that the cod spawns above nine millions in a season. The flounder commonly produces above one million, and the mackerel above 500,000. Scarce one in 100 of these eggs, however, brings forth an animal: they are devoured by all the lesser fry that frequent the shores, by water-fowl in shallow waters, and by the larger fishes in deep waters. Such a prodigious increase, if permitted to come to maturity, would overstock nature; even the ocean itself would not be able to contain, much less provide for, one half of its inhabitants. But two wise purposes are answered by this amazing increase; it preserves the species in the midst of numberless enemies, and serves to furnish the rest with a sustenance adapted to their nature.

14
Generation of fishes.

With respect to the generation of many kinds of fishes, the common opinion is, that the female deposits

her spawn or eggs, and that the male afterwards ejects his sperm or male semen upon it in the water. The want of the organs of generation in fishes gives an apparent probability to this: but it is strenuously opposed by Linnæus. He affirms, that there can be no possibility of impregnating the eggs of any animal out of its body. To confirm this, the general course of nature, not only in birds, quadrupeds, and insects; but even in the vegetable world, has been called in to his assistance, as proving that all impregnation is performed while the egg is in the body of its parent: and he supplies the want of the organs of generation by a very strange process, affirming, that the males eject their semen always some days before the females deposit their ova or spawn; and that the females swallow this, and thus have their eggs impregnated with it. He says, that he has frequently seen, at this time, three or four females gathered about a male, and greedily snatching up into their mouths the semen he ejects. He mentions some of the efores, some perch, and some of the cyprini, in which he had seen this process. But see *COMPARATIVE Anatomy*, n° 154.

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Ichneild.

Many opinions have been started in order to account how it happens that fishes are found in pools, and ditches, on high mountains, and elsewhere. But Gmelin observes, that the duck-kind swallow the eggs of fishes; and that some of these eggs go down, and come out of their bodies unhurt, and so are propagated just in the same manner as has been observed of plants.

For a more particular view of the structure of fishes, see *COMPARATIVE Anatomy*, n° 146—167.

ICHTHYOPHAGI, FISH-EATERS, a name given to a people, or rather to several different people, who lived wholly on fishes. The word is Greek, compounded of *ichthys*, "fish," and *phagō*, "to eat."

The Ichthyophagi spoken of by Ptolemy are placed by Sanfon in the provinces of Nanquin and Xantong. Agatharcides calls all the inhabitants between Carmania and Gedrosia by the name *Ichthyophagi*.

From the accounts given us of the Ichthyophagi by Herodotus, Strabo, Solinus, Plutarch, &c. it appears indeed that they had cattle, but that they made no use of them, excepting to feed their fish withal. They made their houses of large fish-bones, the ribs of whales serving them for their beams. The jaws of these animals served them for doors; and the mortars wherein they pounded their fish, and baked it at the sun, were nothing else but their vertebræ.

ICHTHYPERIA, in natural history, a name given by Dr Hill to the bony palates and mouths of fishes, usually met with either fossil, in single pieces, or in fragments. They are of the same substance with the bufontia; and are of very various figures, some broad and short, others longer and slender; some very gibbous, and others plainly arched. They are likewise of various sizes, from the tenth of an inch to two inches in length, and an inch in breadth.

ICKENILD-STREET, is that old Roman highway, denominated from the Icenians, which extended from Yarmouth in Norfolk, the east part of the kingdom of the Iceni, to Barley in Hertfordshire, giving name in the way to several villages, as Ickworth, Icklingham, and Ickleton in that kingdom. From Barley to Royston it divides the counties of Cambridge and Hertford.

Iconocl.
See

ford. From Ickleford it runs by Tring, crosses Bucks and Oxfordshire, passes the Thames at Goring, and extends to the west part of England.

ICOLMKIL. See IONA.

ICONIUM, at present COGNİ, formerly the capital city of Lycaonia in Asia Minor. St Paul coming to Iconium (Acts xiii. 51. xiv. 1. &c.) in the year of Christ 45, converted many Jews and Gentiles there. It is believed, that in his first journey to this city, he converted St Thecla, so celebrated in the writings of the ancient fathers. But some incredulous Jews excited the Gentiles to rise against Paul and Barnabas, so that they were upon the point of offering violence to them, which obliged St Paul and St Barnabas to fly for security to the neighbouring cities. St Paul undertook a second journey to Iconium in the year 51; but we know no particulars of his journey, which relate peculiarly to Iconium.

ICONOCLASTES, or ICONOCLASTE, breakers of images; a name which the church of Rome gives to all who reject the use of images in religious matters.—The word is Greek, formed from *ἰκονοκλάτης* *imago*, and *κλάω* *rumper*, “to break.”

In this sense, not only the reformed, but some of the eastern churches, are called *Iconoclastes*, and esteemed by them heretics, as opposing the worship of the images of God and the saints, and breaking their figures and representations in churches.

The opposition to images began in Greece under the reign of Bardanes, who was created emperor of the Greeks a little after the commencement of the eighth century, when the worship of them became common. See IMAGE. But the tumults occasioned by it were quelled by a revolution, which, in 713, deprived Bardanes of the imperial throne. The dispute, however, broke out with redoubled fury under Leo the Isaurian, who issued out an edict in the year 726, abrogating, as some say, the worship of images, and ordering all the images, except that of Christ's crucifixion, to be removed out of the churches; but according to others, this edict only prohibited the paying to them any kind of adoration or worship. This edict occasioned a civil war, which broke out in the islands of the Archipelago, and by the suggestions of the priests and monks, ravaged a part of Asia, and afterwards reached Italy. The civil commotions and insurrections in Italy were chiefly promoted by the Roman pontiffs, Gregory I. and II. Leo was excommunicated, and his subjects in the Italian provinces violated their allegiance, and rising in arms either massacred or banished all the emperor's deputies and officers. In consequence of these proceedings, Leo assembled a council at Constantinople in 730, which degraded Germanus, the bishop of that city, who was a patron of images; and he ordered all the images to be publicly burnt, and inflicted a variety of severe punishments upon such as were attached to that idolatrous worship. Hence arose two factions; one of which adopted the adoration and worship of images, and on that account were called *iconoduli* or *iconolatra*; and the other maintained that such worship was unlawful, and that nothing was more worthy the zeal of Christians than to demolish and destroy those statues and pictures which were the occasions of this gross idolatry; and hence they were distinguished by the titles of *iconomachi*, (from *ἰκονομαχία* *image*, and *μαχία* *I contend*), and *iconoclasta*. The zeal of Gre-

Nº 163.

gory II. in favour of image worship, was not only imitated, but even surpassed by his successor Gregory III. in consequence of which the Italian provinces were torn from the Grecian empire.

Constantine, called *Copronymus*, from *κοπρος* “stercus,” and *ωνυμια* “name,” because he was said to have defiled the sacred font at his baptism, succeeded his father Leo in 741, and in 754 convened a council at Constantinople, regarded by the Greeks as the seventh œcumenical council, which solemnly condemned the worship and use of images. Those who, notwithstanding this decree of the council, raised commotions in the state, were severely punished; and new laws were enacted, to set bounds to the violence of monastic rage. Leo IV. who was declared emperor in 775, pursued the same measures, and had recourse to the coercive influence of penal laws, in order to extirpate idolatry out of the Christian church. Irene, the wife of Leo, poisoned her husband in 780; assumed the reins of empire during the minority of her son Constantine, and in 786 summoned a council at Nice in Bithynia, known by the name of the *second Nicene council*, which abrogated the laws and decrees against the new idolatry, restored the worship of images and of the cross, and denounced severe punishments against those who maintained that God was the only object of religious adoration. In this contest, the Britons, Germans, and Gauls, were of opinion, that images might be lawfully continued in churches, but they considered the worship of them as highly injurious and offensive to the Supreme Being. Charlemagne distinguished himself as a mediator in this controversy: he ordered four books concerning images to be composed, refuting the reasons urged by the Nicene bishops to justify the worship of images, which he sent to Adrian the Roman pontiff in 790, in order to engage him to withdraw his approbation of the decrees of the last council of Nice. Adrian wrote an answer; and in 794, a council of 300 bishops, assembled by Charlemagne at Francfort on the Maine, confirmed the opinion contained in the four books, and solemnly condemned the worship of images. In the Greek church, after the banishment of Irene, the controversy concerning images broke out anew, and was carried on by the contending parties, during the half of the ninth century, with various and uncertain success. The emperor Nicephorus appears upon the whole to have been an enemy to this idolatrous worship. His successor, Michael Curopalates, surnamed *Rhangan*, patronized and encouraged it. But the scene changed on the accession of Leo the Armenian to the empire; who assembled a council at Constantinople in 814, that abolished the decrees of the Nicene council. His successor Michael, surnamed *Balb*, disapproved the worship of images, and his son Theophilus treated them with great severity. However, the empress Theodora, after his death, and during the minority of her son, assembled a council at Constantinople in 842, which reinstated the decrees of the second Nicene council, and encouraged image worship by a law. The council held at the same place under Photius, in 879, and reckoned by the Greeks the eighth general council, confirmed and renewed the Nicene decrees. In commemoration of this council, a festival was instituted by the superstitious Greeks, called the *feast of orthodoxy*. The Latins were generally of

Iconocla-
stes.



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Fig. 2.



Fig. 1.

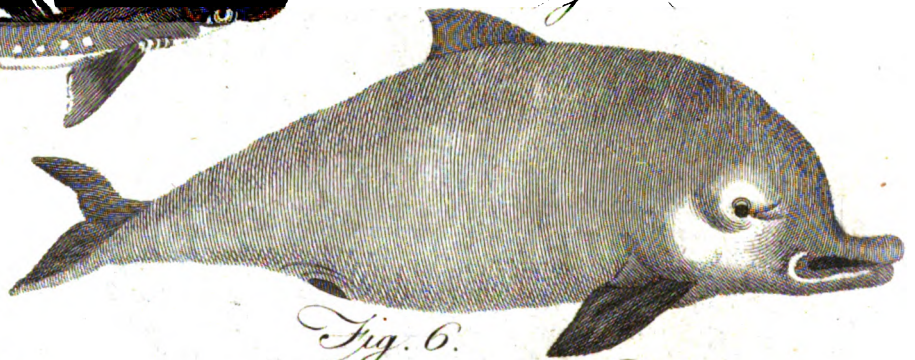


Fig. 3.

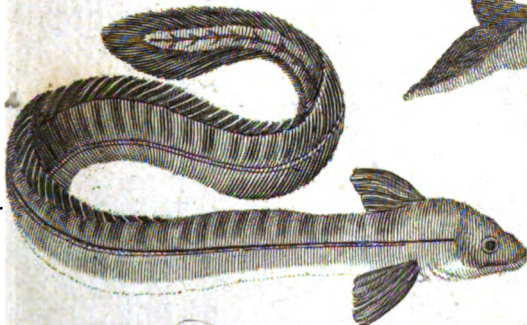


Fig. 6.



Fig. 4.



Fig. 5.



Iconographia of opinion, that images might be suffered as the means of aiding the memory of the faithful, and of calling to their remembrance the pious exploits and virtuous actions of the persons whom they represented; but they detested all thoughts of paying them the least marks of religious homage or adoration. The council of Paris, assembled in 824 by Louis the Meek, resolved to allow the use of images in the churches, but severely prohibited rendering them religious worship. Nevertheless, towards the conclusion of this century, the Gallican clergy began to pay a kind of religious homage to the images of saints, and their example was followed by the Germans and other nations. However, the iconoclasts still had their adherents among the Latins; the most eminent of whom was Claudius bishop of Turin, who, in 823, ordered all images, and even the cross, to be cast out of the churches, and committed to the flames; and he wrote a treatise, in which he declared both against the use and worship of them. He condemned relics, pilgrimages to the holy land, and all voyages to the tombs of saints; and to his writings and labours it was owing, that the city of Turin, and the adjacent country, was, for a long time after his death, much less infected with superstition than the other parts of Europe. The controversy concerning the sanctity of images was again revived by Leo bishop of Chalcedon, in the 11th century, on occasion of the emperor Alexius's converting the figures of silver that adorned the portals of the churches into money in order to supply the exigencies of the state. The bishop obstinately maintained that he had been guilty of sacrilege; and published a treatise, in which he affirmed, that in these images there resided an inherent sanctity, and that the adoration of Christians ought not to be confined to the persons represented by these images, but extended to the images themselves. The emperor assembled a council at Constantinople, which determined, that the images of Christ and of the saints were to be honoured only with a relative worship; and that invocation and worship were to be addressed to the saints only as the servants of Christ, and on account of their relation to him, as their master. Leo, dissatisfied even with these absurd and superstitious decisions, was sent into banishment. In the western church, the worship of images was disapproved and opposed by several considerable parties, as the Petrobrussians, Albigenes, Waldenses, &c. till at length this idolatrous practice was entirely abolished in many parts of the Christian world by the Reformation. See *IMAGE*.

ICONOGRAPHIA (derived from *εικων* "image," and *γραφειν* "I describe"), the description of images or ancient statues of marble and copper; also of busts and semi-busts, penates, paintings in fresco, mosaic works, and ancient pieces of miniature.

ICONOLATRÆ, or **ICONOLATERS** (from *εικων* and *λατρειν* "I worship,") or **ICONODULI** (from *εικων* and *δουλον* "I serve"); those who worship images: A name which the iconoclasts give to those of the Romish communion, on account of their adoring images, and of rendering to them the worship only due to God. See **ICONOCLASTS** and **IMAGE**.

ICOSAHEDRON, in geometry, a regular solid, consisting of 20 triangular pyramids, whose vertexes meet in the centre of a sphere supposed to circumscribe it.

icosandria *Ides*
scribe it; and therefore have their height and bases equal: wherefore the solidity of one of these pyramids multiplied by 20, the number of bases gives the solid contents of the icosahedron.

ICOSANDRIA (from *εικοσι* "twenty," and *ανδρ* "a man or husband"); the name of the 12th class in Linnæus's sexual method, consisting of plants with hermaphrodite flowers, which are furnished with 20 or more stamens, that are inserted into the inner side of the calyx or petals. See **BOTANY**, p. 430.

ICTINUS, a celebrated Greek architect who lived about 430 B. C. built several magnificent temples, and among others that of Minerva at Athens.

IDA (anc. geog.), a mountain situated in the heart of Crete where broadest; the highest of all in the island; round, and in compass 60 stadia (Strabo); the nursing place of Jupiter, and where his tomb was visited in Varro's time.—Another *Ida*, a mountain of Mysia, or rather a chain of mountains (Homer, Virgil), extending from Zeleia on the south of the territory of Cyzicus to Lectum the utmost promontory of Troas. The abundance of its waters became the source of many rivers, and particularly of the Simois, Scamander, Æsepus, Granicus, &c. It was covered with green wood, and the elevation of its top opened a fine extensive view of the Hellespont and the adjacent countries; from which reason it was frequented by the gods during the Trojan war, according to Homer. The top was called *Gargara* (Homer, Strabo); and celebrated by the poets for the judgment of Paris on the beauty of the three goddesses, Minerva, Juno, and Venus, to the last of whom he gave the preference.

IDALIUM (anc. geog.), a promontory on the east side of Cyprus. Now *Capo di Griego*; with a high rugged eminence rising over it, in the form of a table. It was sacred to Venus; and hence the epithet *Idalia* given her by the poets. The eminence was covered with a grove; and in the grove was a little town, in Pliny's time extinct. *Idalia*, according to Bochart, denotes the place or spot sacred to the goddess.

IDEA, the reflex perception of objects, after the original perception or impression has been felt by the mind. See **METAPHYSICS**, *passim*; and **LOGIC**, Part I.

IDENTITY, denotes that by which a thing is itself, and not any thing else; in which sense *identity* differs from *similitude*, as well as *diversity*. See **METAPHYSICS**.

IDES, in the ancient Roman kalendar, were eight days in each month; the first of which fell on the 15th of March, May, July, and October; and on the 13th day of the other months.—The origin of the word is contested. Some will have it formed from *ideo* "to see;" by reason the full moon was commonly seen on the days of the ides: others from *idea* "species, figure," on account of the image of the full moon then visible: others from *idulium*, or *ovis idulis*, a name given by the Hetrurians to a victim offered on that day to Jupiter: others from the Hetrurian word *iduo*, i. e. *divido*; by reason the ides divided the moon into two nearly equal parts.

The ides came between the **KALENDS** and the **NONES**; and were reckoned backwards. Thus they called the 14th day of March, May, July, and October, and the

Idiocy.

12th of the other months, the *pridie idus*, or the day before the ides; the next preceding day they called the *tertia idus*; and so on, reckoning always backwards till they came to the NONES. This method of reckoning time is still retained in the chancery of Rome, and in the kalendar of the Breviary.—The ides of May were consecrated to Mercury: the ides of March were ever esteemed unhappy, after Cæsar's murder on that day: the time after the ides of June was reckoned fortunate for those who entered into matrimony: the ides of August were consecrated to Diana, and were observed as a feast-day by the slaves. On the ides of September, auguries were taken for appointing the magistrates, who formerly entered into their offices on the ides of May, afterwards on those of March.

IDIOCY, a defect of understanding. Both idiocy and LUNACY excuse from the guilt of crimes; (see CRIME, *par. ult.*) For the rule of law as to lunatics, which *no* may be easily adapted to idiots, is, that *furiosus furore solum puniatur*. In criminal cases, therefore, idiots and lunatics are not chargeable for their own acts, if committed when under these incapacities: no, not even for treason itself. Also, if a man in his sound memory commits a capital offence, and before arraignment for it he becomes mad, he ought not to be arraigned for it: because he is not able to plead to it with that advice and caution that he ought. And if, after he has pleaded, the prisoner becomes mad, he shall not be tried: for how can he make his defence? If, after he be tried and found guilty, he loses his senses before judgment, judgment shall not be pronounced; and if, after judgment, he becomes of nonsane memory, execution shall be stayed: for, peradventure, says the humanity of the English law, had the prisoner been of sound memory, he might have alleged something in stay of judgment or execution. Indeed, in the bloody reign of Henry VIII. a statute was made, which enacted, that if a person, being *compos mentis*, should commit high treason, and after fall into madness, he might be tried in his absence, and should suffer death, as if he were of perfect memory. But this savage and inhuman law was repealed by the statute 1 & 2 Ph. & M. c. 10. For, as is observed by Sir Edward Coke, "the execution of an offender is for example, *ut pena ad paucos, metus ad omnes perveniat*: but so it is not when a madman is executed; but should be a miserable spectacle, both against law, and of extreme inhumanity and cruelty, and can be no example to others." But if there be any doubt whether the party be *compos* or not, this shall be tried by a jury. And if he be so found, a total idiocy, or absolute insanity, excuses from the guilt, and of course from the punishment, of any criminal action committed under such deprivation of the senses: but if a lunatic hath lucid intervals of understanding, he shall answer for what he does in those intervals, as if he had no deficiency. Yet, in the case of absolute madmen, as they are not answerable for their actions, they should not be permitted the liberty of acting unless under proper control; and, in particular, they ought not to be suffered to go loose, to the terror of the king's subjects. It was the doctrine of our ancient law, that persons deprived of their reason might be confined till they recovered their senses, without waiting for the forms of a commission or other special authority from the crown:

and now, by the vagrant acts, a method is chalked out for imprisoning, chaining, and sending them to their proper homes.

The matrimonial contract likewise cannot take place in a state of idiocy. It was formerly adjudged, that the issue of an idiot was legitimate, and his marriage valid. A strange determination! since consent is absolutely requisite to matrimony, and neither idiots nor lunatics are capable of consenting to any thing. And therefore the civil law judged much more sensibly, when it made such deprivations of reason a previous impediment, though not a cause of divorce if they happened after marriage. And modern resolutions have adhered to the sense of the civil law, by determining that the marriage of a lunatic, not being in a lucid interval, was absolutely void. But as it might be difficult to prove the exact state of the party's mind at the actual celebration of the nuptials, upon this account (concurring with some private family-reasons*), the statute 15 Geo. II. c. 30. has provided, that the marriage of lunatics and persons under phrenzies (if found lunatics under a commission, or committed to the care of trustees under any act of parliament) before they are declared of sound mind by the lord chancellor, or the majority of such trustees, shall be totally void.

Idiots and persons of nonsane memory, as well as infants and persons under duress, are not totally disabled either to convey or purchase, but *sub modo* only. For their conveyances and purchases are voidable, but not actually void. The king, indeed, on behalf of an idiot, may avoid his grants or other acts. But it hath been said, that a *non compos* himself, though he be afterwards brought to a right mind, shall not be permitted to allege his own insanity in order to avoid such grant: for that no man shall be allowed to stupify himself, or plead his own disability. The progress of this notion is somewhat curious. In the time of Edward I. *non compos* was a sufficient plea to avoid a man's own bond: and there is a writ in the register for the alienor himself to recover lands aliened by him during his insanity; *dum fuit non compos mentis sue, ut dicit*, &c. But under Edward III. a scruple began to arise, whether a man should be permitted to *blemish* himself, by pleading his own insanity: and, afterwards, a defendant in assize having pleaded a release by the plaintiff since the last continuance, to which the plaintiff replied (*ore tenus*, as the manner then was) that he was out of his mind when he gave it, the court adjourned the assize; doubting, whether as the plaintiff was sane both then and at the commencement of the suit, he should be permitted to plead an intermediate deprivation of reason; and the question was asked, how he came to remember to release, if out of his senses when he gave it? Under Henry VI. this way of reasoning (that a man shall not be allowed to disable himself, by pleading his own incapacity, because he cannot know what he did under such a situation) was seriously adopted by the judges in argument; upon a question, whether the heir was barred of his right of entry by the seoffment of his insane ancestor? And from these loose authorities, which Fitzherbert does not scruple to reject as being contrary to reason, the maxim that a man shall not fluster himself, hath been handed down as settled law: though later opinions, feeling the inconvenience

Black.
Comment.

* See Pri-
vate Act
23 Geo. II.
c. 6.

Idiom

Idleness

venience of the rule, have in many points endeavoured to restrain it. And, clearly, the next heir, or other person interested, may, after the death of the idiot or *non compos*, take advantage of his incapacity and avoid the grant. And so too, if he purchases under this disability, and does not afterwards upon recovering his senses agree to the purchase, his heir may either waive or accept the estate at his option. In like manner, an infant may waive such purchase or conveyance, when he comes to full age; or, if he does not then actually agree to it, his heirs may waive it after him. Persons also, who purchase or convey under duress, may affirm or avoid such transaction, whenever the duress is ceased. For all these are under the protection of the law; which will not suffer them to be imposed upon through the imbecility of their present condition; so that their acts are only binding, in case they be afterwards agreed to when such imbecility ceases. Yet the guardians or committees of a lunatic, by the statute 11 Geo. III. c. 20. are empowered to renew in his right, under the directions of the court of chancery, any lease for lives or years, and apply the profits of such renewal for the benefit of such lunatic, his heirs, or executors. See LUNACY.

IDIOM, among grammarians, properly signifies the peculiar genius of each language, but is often used in a synonymous sense with dialect. The word is Greek, *ἰδιωμα* "propriety;" formed of *ιδιος* "proper, own."

IDIOPATHY, in physic, a disorder peculiar to a certain part of the body, and not arising from any preceding disease; in which sense it is opposed to sympathy. Thus, an epilepsy is idiopathic when it happens merely through some fault in the brain; and sympathetic when it is the consequence of some other disorder.

IDIOSYNCRASY, among physicians, denotes a peculiar temperament of body, whereby it is rendered more liable to certain disorders than persons of a different constitution usually are.

IDIOT, or IDIOT, in our laws, denotes a natural fool, or a fool from his birth. See IDIOCY.

The word is originally Greek, *ιδιωτης*, which primarily imports a *private person*, or one who leads a private life, without any share or concern in the government of affairs.

A person who has understanding enough to measure a yard of cloth, number twenty rightly, and tell the days of the week, &c. is not an idiot in the eye of the law. But a man who is born deaf, dumb, and blind, is considered by the law in the same state as an idiot.

IDIOT is also used, by ancient writers, for a person ignorant or unlearned; answering to *illiteratus* or *imperitus*. In this sense, Victor tells us, in his Chronicle, that in the consulship of Messiah, the Holy Gospels, by command of the emperor Anastasius, were corrected and amended, as having been written by idiot evangelists: *Tanquam ab idiotis evangelistis composita*.

IDLENESS, a reluctance in people to be employed in any kind of work.

Idleness in any person whatsoever is a high offence against the public economy. In China it is a maxim, that if there be a man who does not work, or a woman that is idle, in the empire, somebody must

suffer cold or hunger: the produce of the lands not being more than sufficient, with culture, to maintain the inhabitants; and therefore, though the idle person may shift off the want from himself, yet it must in the end fall somewhere. The court also of Arcopagus at Athens punished idleness, and exerted a right of examining every citizen in what manner he spent his time; the intention of which was, that the Athenians, knowing they were to give an account of their occupations, should follow only such as were laudable, and that there might be no room left for such as lived by unlawful arts. The civil law expelled all sturdy vagrants from the city: and, in our own law, all idle persons or vagabonds, whom our ancient statutes describe to be "such as wake on the night, and sleep on the day, and haunt customable taverns and ale-houses, and routs about; and no man wot from whence they come, ne whether they go;" or such as are more particularly described by statute 17 Geo. II. c. 5. and divided into three classes, *idle* and *disorderly* persons, *rogues* and *vagabonds*, and *incorrigible rogues*;—all these are offenders against the good order, and blemishes in the government, of any kingdom. They are therefore all punished, by the statute last mentioned; that is to say, idle and disorderly persons with one month's imprisonment in the house of correction; rogues and vagabonds with whipping, and imprisonment not exceeding six months; and incorrigible rogues with the like discipline, and confinement not exceeding two years: the breach and escape from which confinement in one of an inferior class, ranks him among incorrigible rogues; and in a rogue (before incorrigible) makes him a felon, and liable to be transported for seven years. Persons harbouring vagrants are liable to a fine of forty shillings, and to pay all expences brought upon the parish thereby: in the same manner as, by our ancient laws, whoever harboured any stranger for more than two nights, was answerable to the public for any offence that such his inmate might commit.

IDOL, in pagan theology, an image, or fancied representation of any of the heathen gods.—This image, of whatever materials it consisted, was, by certain ceremonies, called *consecration*, converted into a god. While under the artificer's hands, it was only a mere statue. Three things were necessary to turn it into a god; proper ornaments, consecration, and oration. The ornaments were various, and wholly designed to blind the eyes of the ignorant and stupid multitude, who are chiefly taken with show and pageantry. Then followed the consecration and oration, which were performed with great solemnity among the Romans. See IMAGI.

IDOLATRY, or the worship of idols, may be distinguished into two sorts. By the first, men adore the works of God, the sun, the moon, the stars, angels, demons, men, and animals: by the second, men worship the work of their own hands, as statues, pictures, and the like: and to these may be added a third, that by which men have worshipped the true God under sensible figures and representations. This indeed may have been the case with respect to each of the above kinds of idolatry; and thus the Israelites adored God under the figure of a calf.

The stars were the first objects of idolatrous worship, on account of their beauty, their influence on

Idol,
Idolatry.Blackst.
Comment.

Jeddo.
Jeffreys.

serves for a parish-church.—Jedburgh is the seat of the sheriff's court and presbytery; and is a barony in the family of Lothian, whose eldest son is called Earl of Ancrum.

JEDDO, the capital town or city of the islands of Japan, where the emperor resides. It is open on all sides, having neither walls nor ramparts; and the houses are built with earth, and boarded on the outside to prevent the rain from destroying the walls. In every street there is an iron gate, which is shut up in the night; and a kind of custom-house or magazine, to put merchandizes in. It is a large place, being nine miles in length and six in breadth, and contains 1,000,000 of inhabitants. A fire happened in 1658, which, in the space of 48 hours, burnt down 100,000 houses, and in which a vast number of inhabitants perished. The emperor's palace and all the rest were reduced to ashes; but they are all rebuilt again. The royal palace is in the middle of the town; and is defended with walls, ditches, towers, and bastions. Where the emperor resides, there are three towers nine stories high, each covered with plates of gold; and the hall of audience is said to be supported by pillars of massy gold. Near the palace are several others, where the relations of the emperor live. The empress has a palace of her own, and there are 20 small ones for the concubines. Besides, all the vassal kings have each a palace in the city, with a handsome garden, and stables for 2000 horses. The houses of the common sort are nothing but a ground-floor, and the rooms are parted by folding-screens; so that they can make the rooms larger or smaller at pleasure. It is seated in an agreeable plain, at the bottom of a fine bay; and the river which crosses it, is divided into several canals. E. Long. 140. O. N. Lat. 35. 32.

JEFFERY. See **GEOFFREY**.

JEFFREYS (Sir George), baron Wem, commonly called *Judge Jeffreys*, was the sixth son of John Jeffreys, Esq; of Acton in Denbighshire; and was educated at Westminster-school, whence he removed to the Inner Temple, where he applied himself to the study of the law. Alderman Jeffreys, who was probably related to him, introduced him among the citizens of London; and he being a merry bottle-companion, soon came into great business, and was chosen their recorder. He was afterwards chosen solicitor to the duke of York; and in 1680 was knighted, and made chief-justice of Chester. At length, resigning the recordership, he obtained the post of chief-justice of the king's-bench, and, soon after the accession of James II. the great seal. During the reign of king Charles II. he showed himself a bitter enemy to those dissenting ministers who, in that time of persecution, were tried by him: he was one of the greatest advisers and promoters of all the oppressions and arbitrary measures carried on in the reign of James II.; and his sanguinary and inhuman proceedings against Monmouth's unhappy adherents in the west will ever render his name infamous. Whenever the prisoner was of a different party, or he could please the court by condemning him, instead of appearing according to the duty of his office, as his counsel, he would scarce allow him to speak for himself; but would load him with the grossest and most vulgar abuse, browbeat, insult, and turn to ridicule the witacesses that spoke in his behalf; and even

threaten the jury with fines and imprisonment, if they made the least hesitation about bringing in the prisoner guilty. Yet it is said, that when he was in temper, and matters perfectly indifferent came before him, no one became a seat of justice better. Nay, it even appears, that, when he was under no state-influence, he was sometimes inclined to protect the natural and civil rights of mankind, of which the following instance has been given:—The mayor and aldermen of Bristol had been used to transport convicted criminals to the American plantations, and sell them by way of trade. This turning to good account, when any pilferers or petty rogues were brought before them, they threatened them with hanging; and then some officers who attended, earnestly persuaded the ignorant intimidated creatures to beg for transportation, as the only way to save them; and in general their advice was followed. Then, without more form, each alderman in course took one, and sold him for his own benefit; and sometimes warm disputes arose between them about the next turn. This infamous trade, which had been carried on many years, coming to the knowledge of the lord chief justice, he made the mayor descend from the bench, and stand at the bar in his scarlet and furr, with his guilty brethren the aldermen, and plead as common criminals. He then obliged them to give securities to answer informations; but the proceedings were stopped by the Revolution.—However, the brutality Jeffreys commonly showed on the bench, where his voice and visage were equally terrible, at length exposed him to a severe mortification. A scrivener of Wapping having a cause before him, one of the opposite's counsel said he was a strange fellow, and sometimes went to church, and sometimes to conventicles; and it was thought he was a trimmer. At this the chancellor fired: "A trimmer? (said he); I have heard much of that monster, but never saw one. Come forth, Mr Trimmer, and let me see your shape." He then treated the poor fellow so roughly, that, on his leaving the hall, he declared he would not undergo the terrors of that man's face again to save his life, and he should certainly retain the frightful impressions of it as long as he lived. Soon after, the prince of Orange coming, the lord chancellor, dreading the public resentment, disguised himself in a seaman's dress, in order to leave the kingdom; and was drinking in a cellar, when this scrivener coming into the cellar, and seeing again the face which had filled him with such horror, started; on which Jeffreys, fearing he was known, feigned a cough, and turned to the wall with his pot of beer in his hand. But Mr Trimmer going out, gave notice that he was there; and the mob rushing in, seized him, and carried him before the lord-mayor, who sent him with a strong guard to the lords of the council, by whom he was committed to the Tower, where he died in 1689.—It is remarkable, that the late countess of Pomfret met with very rude insults from the populace on the western road, only because she was granddaughter of the inhuman Jeffreys.

JEHOVAH, one of the scripture names of God, signifying the Being who is self-existent and gives existence to others.

So great a veneration had the Jews for this name, that they left off the custom of pronouncing it, where-by its true pronunciation was forgotten. They call it

Jeffreys.
Jehovah.

Jejuna *tetragrammaton*, or "the name with four letters; and believe, that whoever knows the true pronunciation of it cannot fail to be heard by God.

Jeniskoi. **JEJUNE STYLE.** See **STYLE**.

JEJUNUM, the second of the small guts; thus called from the Latin *jejunus*, "hungry;" because always found empty. See **ANATOMY**, n° 93.

JELLALÆAN, or *GELALÆAN Calendar, epocha, and year*. See **CALENDAR**, **EPOCHA**, and **YEAR**.

JELLY, a form of food, or medicine, prepared from the juices of ripe fruits, boiled to a proper consistence with sugar, or the strong decoctions of the horns, bones, or extremities of animals, boiled to such a height as to be stiff and firm when cold, without the addition of any sugar.—The jellies of fruits are cooling, saponaceous, and acescent, and therefore are good as medicines in all disorders of the primæ viæ, arising from alkalescent juices, especially when not given alone, but diluted with water. On the contrary, the jellies made from animal substances are all alkalescent, and are therefore good in all cases in which an acidity of the humours prevails: the alkalescent quality of these is, however, in a great measure taken off, by the adding lemon juice and sugar to them. There were formerly a sort of jellies much in use, called *compound jellies*; these had the restorative medicinal drugs added to them, but they are now scarce ever heard of.

Jelly-Oat, a preparation of common oats, recommended by many of the German physicians in all hectic disorders, to be taken with broth of snails or crayfish.—It is made by boiling a large quantity of oats, with the husk taken off, with some hartshorn shavings, and currants together, with a leg of veal cut to pieces, and with the bones all broken; these are to be set over the fire with a large quantity of water, till the whole is reduced to a sort of jelly; which when strained and cold will be very firm and hard. A few spoonfuls of this are to be taken every morning, diluted with a basin of either of the above-mentioned broths, or any other warm liquor.

JEMPTERLAND, a province of Sweden, bounded on the north by Angermania, on the east by Medelpadia, on the south by Helsingia, and on the west by Norway. It is full of mountains; and the principal towns are Resundt, Lich, and Doera.

JENA, a strong town of Germany, in the circle of Upper Saxony, and in Thuringia, with an university. It is seated on the river Sala, in E. Long. 2. 59. N. Lat. 51. 0.

JENCAPORE, a town of Asia, in Indostan, and in the dominions of the Great Mogul, capital of a territory of the same name. It is seated on the river Chaul, in E. Long. 76. 25. N. Lat. 30. 30.

JENISA, a river of the Russian empire, that runs from north to south through Siberia, and falls into the Frozen Ocean.

JENISKOI, a town of the Russian empire, in Siberia, seated on the river Jenisa. It is large, populous, and pretty strong; and there are villages for several miles round it. It is subject to the Tungusians, who are pagans, and chiefly live on the above river. They pay a tribute to the emperor for every bow, reckoning a man and a woman for one. The climate is extremely cold; and no other fruits grow there but black and red currants, strawberries, and gooseberries.

Corn, butchers meat, and wild fowls; are very cheap. *Jencoping* E. Long. 86. 25. N. Lat. 58. 40.

JENCOPING, a town of Sweden, in the province of Smaland, seated on the south side of the lake Welter, with a strong citadel. The houses are all built with wood. E. Long. 14. 20. N. Lat. 57. 22.

JENKIN (Robert), a learned English divine in the 18th century, was bred at Cambridge, became master of St John's college, and wrote several books much esteemed, viz. 1. An historical examination of the authority of General Councils, 4to. 2. The reasonableness and certainty of the Christian religion, 2 vols 8vo. 3. *Defensio S. Augustini*. This book is written against M. Le Clerc. 4. Remarks on some books lately published, viz. Mr Whiston's eight sermons, Locke's paraphrase, &c. 5. A translation from the French of the life of Apollonius Tyaneus.

JENKINS (Henry). See **LONGEVITY**.

JENKINS (Sir Leoline), a learned civilian and able statesman of the last century, born in Glamorganshire about the year 1623. Being rendered obnoxious to the parliament during the civil war by adhering to the king's cause, he consulted his safety by flight; but returning on the restoration, he was admitted an advocate in the court of arches, and succeeded Dr Exton as judge. When the queen-mother Henrietta died in 1669 at Paris, her whole estate, real and personal, was claimed by her nephew Louis XIV.: upon which Dr Jenkins's opinion being called for and approved, he went to Paris, with three others joined with him in a commission, and recovered her effects; for which he received the honour of knighthood. He officiated as one of the mediators at the treaty of Nimeguen, in which tedious negotiation he was engaged about four years and a half; and was afterwards made a privy counsellor and secretary of state. He died in 1685; and as he never married, bequeathed his whole estate to charitable uses: he was so great a benefactor to Jesus-college Oxford, that he is generally looked on as the second founder. All his letters and papers were collected and printed in 1724, in 2 vols folio.

JENNY-WREN, a name given by writers on song-birds to the wren. See **WREN**.

JENTACULUM was, amongst the Romans, a morning refreshment like our breakfast. It was exceedingly simple, consisting, for the most part, of bread alone; labouring people indeed had something more substantial to enable them to support the fatigues of their employment. What has been here said may be observed of the Jews and Grecians also. The Greeks distinguished this morning-meal by the several names of *αριον*, *απαλιμας* or *απαλιμα*, though *αριον* is generally applied to dinner. See **EATING** and **DINNER**.

JEOFAILE, (compounded of three French words, *J'ay faillie*, "I have failed"), a term in law, used for an oversight in pleading or other proceedings at law.

The showing of these defects or oversights was formerly often practised by the counsel; and when the jury came into court in order to try the issue, they said, This inquest you ought not to take; and after verdict they would say to the court, To judgment you ought not to go. But several statutes have been made to avoid the delays occasioned by such suggestions; and a judgment is not to be stayed after verdict for mistaking the Christian or surname of either of the parties, or

Jephthah in a sum of money, or in the day, month, year, &c. where the same are rightly named in any preceding record.

JEPHTHAH, judge of Israel, and successor to Jair in the government of the people, was a native of Mispheh, and the son of one Gilead by a harlot. This Gilead having married a lawful wife, and had children by her, these children drove Jephthah from his father's house, saying, that he should not be heir with them. Jephthah retired into the land of Tob, and there he became captain of a band of thieves and such other people as he had picked up together. At that time, the Israelites beyond Jordan, seeing themselves pressed by the Ammonites, came to desire assistance from Jephthah; and that he would take upon him the command of them. Jephthah at first reproached them with the injustice which they had done him, or at least which they had not prevented, when he was forced from his father's house. But as these people were very earnest in their request, he told them, that he would succour them, provided that at the end of the war they would acknowledge him for their prince. This they consented to, and promised with an oath.

Jephthah, in the year of the world 2817, having been acknowledged prince of the Israelites in an assembly of the people, was filled with the spirit of God, and began to get his troops together; to that end, he went over all the land which the children of Israel possessed beyond Jordan. At the same time he made a vow to the Lord, that if he were successful against the Ammonites, he would offer up for a burnt-offering whatever should first come out of his house to meet him. The battle being fought, Jephthah remained conqueror, and ravaged all the land of Ammon. But as he returned to his house, his only daughter came out to meet him with timbrels and with dances: whereupon Jephthah tore his clothes, and said, "Alas, my daughter, thou hast brought me very low: for I have made a vow unto the Lord, and cannot fail in the performance of it." His daughter answered, "My father, if thou hast made a vow unto the Lord, do with me as thou hast promised; grant me only the favour that I may be at liberty to go up to the mountains, and there for two months bewail my virginity with my companions." Jephthah granted her this liberty; and at the end of two months, he offered up his daughter, who died a virgin, a burnt-offering, agreeable to his vow, according to the opinion of most commentators. In the mean time, the Ephraimites, jealous of the victory obtained by Jephthah over the Ammonites, passed the river Jordan in a tumultuous manner, came and complained to Jephthah that he had not invited them to this war, and threatened to set fire to his house. Jephthah answered them, that he had sent to desire their assistance; but observing that they did not come, he put his life in his hands and hazarded a battle. The Ephraimites not being satisfied with these reasons, Jephthah assembled the people of Gilead, gave them battle, and defeated them; so that there were two and forty thousand men of the tribe of Ephraim killed that day. We know nothing more in particular concerning the life of Jephthah, only that he judged Israel six years, and was buried in a city of Gilead.

St Paul (Heb. xi. 32.) places Jephthah among the saints of the Old Testament, the merit of whose faith distinguished them. But it must be observed, that there is

something so extraordinary in Jephthah's vow, that notwithstanding the scripture speaks of it in very plain and clear terms, yet such difficulties arise concerning it as perplex the commentators. Some maintain, that this daughter of Jephthah was not sacrificed, as that would have been a violation of the law of Moses; and especially, when by the same law he might have redeemed his daughter for ten shekels of silver: therefore they contend, that it was something else Jephthah did to his daughter, such as devoting her to a state of celibacy, or dedicating her to the service of God.—On the other hand, those who maintain the affirmative, or that Jephthah's daughter was actually sacrificed, urge, that the times wherein Jephthah lived were sadly addicted to idolatry; also the manner wherein he lived before he was called to the assistance of his country; but above all, the clear, evident, and express meaning of the text. They observe, that vows of perpetual virginity are institutions of a modern date; and had there been no more in it, there would have been little occasion for rending his clothes, and bemoaning himself as he did; besides the bitter lamentations made by herself, and by all the daughters of Israel in succeeding times. But if she was sacrificed, we may safely and confidently aver with Josephus, who says that she was, that this sacrifice was neither lawful nor acceptable to God; but, on the contrary, an abominable crime, that might, notwithstanding, have proceeded from a mistaken principle of religion.

JERBOA. See Mus.

JEREMIAH (*the Prophecy of*), a canonical book of the Old Testament. This divine writer was of the race of the priests, the son of Hilkiah of Anathoth, of the tribe of Benjamin. He was called to the prophetic office when very young, about the 13th year of Josiah, and continued in the discharge of it about 40 years. He was not carried captive to Babylon with the other Jews, but remained in Judea to lament the desolation of his country. He was afterwards a prisoner in Egypt with his disciple Baruch, where it is supposed he died in a very advanced age. Some of the Christian fathers tell us he was stoned to death by the Jews, for preaching against their idolatry; and some say he was put to death by Pharaoh Hophrah, because of his prophecy against him. Part of the prophecy of Jeremiah relates to the time after the captivity of Israel, and before that of Judah, from the first chapter to the 44th; and part of it was in the time of the latter captivity, from the 44th chapter to the end. The prophet lays open the sins of Judah with great freedom and boldness, and reminds them of the severe judgments which had befallen the ten tribes for the same offences. He passionately laments their misfortune, and recommends a speedy reformation to them. Afterwards he predicts the grievous calamities that were approaching, particularly the 70 years captivity in Chaldea. He likewise foretells their deliverance and happy return, and the recompence which Babylon, Moab, and other enemies of the Jews, should meet with in due time. There are likewise several intimations in this prophecy concerning the kingdom of the Messiah; also several remarkable visions, and types, and historical passages relating to those times. The 52d chapter does not belong to the prophecy of Jeremiah, which probably was added by Ezra, and contains a narrative of the ta-

king.

Jericho
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Jerome.

king of Jerusalem, and of what happened during the captivity of the Jews, to the death of Jechonias. St Jerom has observed upon this prophet, that his style is more easy than that of Isaiah and Hosea; that he retains something of the rusticity of the village where he was born; but that he is very learned and majestic, and equal to those two prophets in the sense of his prophecy.

JERICHO, or **HIERICHUS** (anc. geog.), a city of Judea; situated between Jordan and Jerusalem, at the distance of 150 stadia from the latter, and 60 from the former. Josephus says, "the whole space from Jerusalem is desert and rocky, and equally barren and uncultivated from Jericho to the lake Asphakites; yet the places near the town and above it are extremely fertile and delicious, so that it may be justly called a *divine plain*, surpassing the rest of the land of Canaan, no unfruitful country, and surrounded by hills in the manner of an amphitheatre. It produces opobalsamum myrobalana, and dates; from the last of which it is called the *city of palm-trees*, by Moses. The place is now called *Raha*; and is situated, M. Volney informs us, "in a plain six or seven leagues long, by three wide, around which are a number of barren mountains, that render it extremely hot. Here formerly was cultivated the balm of Mecca. From the description of the Hadjes, this is a shrub similar to the pomegranate-tree, with leaves like those of rue: it bears a pulpy nut, in which is contained a kernel that yields the resinous juice we call *balm* or *balsam*. At present there is not a plant of it remaining at Raha; but another species is to be found there, called *Zakkoun*, which produce a sweet oil, also celebrated for healing wounds. This zakkoun resembles a plum-tree; it has thorns four inches long, with leaves like those of the olive-tree, but narrower and greener, and prickly at the end; its fruit is a kind of acorn, without a calyx, under the bark of which is a pulp, and then a nut, the kernel of which gives an oil that the Arabs sell very dear: this is the sole commerce of Raha, which is no more than a ruinous village.

JERIMOTH. See **JARIMUTH**.

JEROME (St), in Latin *Hieronymus*, a famous doctor of the church, and the most learned of all the Latin fathers, was the son of Eusebius; and was born at Stridon, a city of the ancient Pannonia, about the year 340. He studied at Rome under Donatus, the learned grammarian. After having received baptism, he went into Gaul, and there transcribed St Hilary's book *de Synodis*. He then went into Aquileia, where he contracted a friendship with Heliodorus, who prevailed on him to travel with him into Thrace, Pontus, Bithynia, Galatia, and Cappadocia. In 372 St Jerome retired into a desert in Syria, where he was persecuted by the orthodox of Melitius's party, for being a Sabellian, because he made use of the word *Hypostasis*, which had been used by the council of Rome in 369. This obliged him to go to Jerusalem; where he applied himself to the study of the Hebrew language, in order to receive a more perfect knowledge of the Holy Scriptures; and about this time he consented to be ordained, on condition that he should not be confined to any particular church. In 381, he went to Constantinople to hear St Gregory of Nazianzen; and the following year returned to Rome, where he was

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made secretary to pope Damasus. He then instructed many Roman ladies in piety and the knowledge of the sciences, which exposed him to the calumnies of those whom he zealously reprov'd for their irregularities; and Pope Siricius not having all the esteem for him which his learning and virtue justly intitled him to, this learned doctor left Rome, and returned to the monastery of Bethlehem, where he employed himself in writing against those whom he called *heretics*, especially against Vigilantius and Jovinian. He had a quarrel with John of Jerusalem and Rufinus about the Origenists. He was the first who wrote against Pelagius; and died on the 30th of September 420, at about 80 years of age. There have been several editions of his works; the last, which is that of Verona, is in 14 vols folio. His principal works are, 1. A Latin version of the Holy Scriptures, distinguished by the name of the *Vulgate*. 2. Commentaries on the Prophets, Ecclesiastes, St Matthew's Gospel, and the Epistle to the Galatians, Ephesians, Titus, and Philemon. 3. Polemical treatises against Montanus, Helvidius, Jovinian, Vigilantius, and Pelagius. 4. Several letters. 5. A treatise on the lives and writings of the ecclesiastical authors who had flourished before his time.—St Jerome's style is lively and animated, and sometimes sublime.

Jerome of Prague, so called from the place of his birth, in Bohemia. He was neither a monk nor clergyman, but had a learned education. Having embraced the opinions of John Hufs, he began to propagate them in the year 1480. In the mean time the council of Nice kept a watchful eye over him, and considering him as a dangerous person, cited him to appear before them and give an account of his faith. In obedience to this citation, he went to Constance; but on his arrival, in 1415, finding Hufs in prison, he set out for his own country. Being seized however on the way, imprisoned, and examined, he was so intimidated, that he retracted, and pretended to approve of the condemnation of Wickliff's and Hufs's opinions; but on the 26th of May 1416, he was condemned that recantation in these terms: "I am not ashamed to confess here publicly my weakness. Yes, with horror I confess my base cowardice. It was only the dread of the punishment by fire which drew me to consent, against my conscience, to the condemnation of the doctrine of Wickliff and Hufs." Accordingly sentence was passed on him; in pursuance of which he was delivered to the secular arm, and burnt in 1416. He was a person of great parts, learning, and elocution.

JERONYMITES, or **HIERONYMITES**, a denomination given to divers orders or congregations of religious; otherwise called *Hermits of St Jerome*.

JERSEY, an island in the English channel, believed to be the island called in the Itinerary *Cesarea*, in succeeding times *Augia*, by us *Gersey*, more frequently *Jersey*. It is situated in the English channel, 18 miles to the west of Normandy, and 84 to the south of Portland in Dorsetshire, and in the time of the Romans was called *Cesarea*. It is not above 12 miles in length, nor much above 6 where broadest, which is at the two extremities. It is defended by rocks and dangerous quicksands. On the north side the cliffs rise 40 or 50 fathoms high, which render it inaccessible on that side; but on the south the shore is almost level with the water. In the west part of the island

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Jersey.

Jersey. island is a large tract of land once cultivated and very fertile, but now a barren desert, caused by the westerly winds throwing up sand from the bottom to the top of the highest cliffs. The higher lands are diversified by gritty, gravelly, stony, and fine mould; the lower by a deep, rich, and heavy soil. The middle part of the island is somewhat mountainous, and so thick planted with trees, that at a distance it resembles one entire forest, though in walking through it there is hardly a thicket or any other thing to be seen but hedge-rows and orchards of apple-trees. The valleys under the hills are finely watered by brooks, and have plenty of cattle and small sheep, with very fine wool, and very sweet meat, which is ascribed to the shortness of the grass. The horses are good for draught; but few fit for the saddle. The island produces variety of trees, roots, and herbs; but not corn enough for the inhabitants, who therefore send for it to England and France, and sometimes to Dantzic. The fields are inclosed by great mounds of earth, raised from 6 to 8 or 10 feet high, proportionably thick and solid, planted with quicksets and trees. As the air of this island is very healthy, those of the inhabitants who are temperate live to a great age: but the coast is very subject to storms by westerly wind, from which they have no land to shelter them nearer than North America; and there is a vast chain of rocks about the island, among which the tides and currents are so strong and rapid, that the navigation is dangerous to those who are not perfectly acquainted with the coast. The buildings of this island are generally of rag-stone; but some of the wealthy inhabitants have their houses fronted with a reddish white stone, capable of being polished like marble, and of which there is a rich quarry on a hill called *Montmado*. The ordinary dwellings are thatched. The churches are very plain buildings, most of them with square steeples; and the communion table is not at the east end, as in the English churches, but placed just under the pulpit. The staple manufacture is knit stockings and caps, many thousand pair of which are weekly sold at St Helier to the merchants; also cyder, of which 25,000 hogheads have been made here in one year. Their principal foreign trade is to Newfoundland; whither, particularly in 1732, they sent 24 ships; these proceed from thence to the Mediterranean to dispose of their fish.

On the south of the island the sea seems to have encroached upon the land (which, as we have before observed, declines on that side), and to have swallowed upwards of six square miles, making a very beautiful bay of about three miles broad, and near the same in depth. In the east corner of this bay stands the town of St Helier, very happily situated. But the principal haven is in the western corner of the bay, which receives its name from it, being called *St Aubin's*. There are, besides these, several other havens of less note; as, St Brelade's Bay, at the back of St Aubin's; the great bay of St Ouen, which takes in the greatest part of the west side of the island, where the largest ships may ride in 12 and 15 fathoms, safe from all but east winds. La Crevaile is a port only for boats; Greve de Lecq and Port St John are also small havens on the north side, where is likewise Bonnevit. On the east there is the bay of St Catherine, and the harbour of Rosel. To the south-west lies the haven

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Jersey. de la Chaussée. The last we shall mention is the port de Pas, a very little to the eastward of St Aubin's Bay.

The towns of St Helier and St Aubin, which, as already mentioned, stand both in the same bay called *St Aubin's Bay*, opening to the south, are about three miles asunder. St Helier took its name from *Elerius* or *Helier*, a holy man, who lived in this island many centuries ago, and was slain by the Pagan Normans at their coming hither. He is mentioned among the martyrs in the martyrology of Coutance. His little cell with the stone bed is still shown among the rocks; and in memory of him a noble abbey of Canons regular was founded in the little island in this bay, and annexed to Cherburgh abbey in Normandy in the reign of Henry I. and suppressed as an alien priory. The town of St Helier stands at the foot of a long and high rocky hill at the east end. It is a well-built and populous place; greatly improved and enlarged within the last century; and contains about 400 houses, mostly shops, and near 2000 inhabitants. The market-place in the centre is spacious, surrounded with handsome houses, among which is the Cobue Royale or court of justice. At the top of the market-place is a statue of George II. of bronze gilt. The market is held on a Saturday, and much frequented.

St Aubin at the west end of the bay is principally inhabited by merchants and masters of ships, whom the neighbourhood of the port has invited hither. It is not more than half the size of the other town, though greatly increased within these 100 years; and has a good stone pier carried far into the sea, where ships of considerable burden lie safe under the guns of the adjoining fort.

The isle of St Helier, more to the east in the same bay, is in circuit near a mile, surrounded by the sea at or about every half flood. On the site of the abbey before mentioned is now Elizabeth Castle, one of the largest and strongest fortresses in Britain. Queen Elizabeth began it, and gave it her name. Charles I. enlarged, and Charles II. who was twice here, completed it. It was the last fortress that held out for the king. It is the residence of the governor and garrison, and occupies the whole isle, from whence at low water is a passage called the *bridge*, half a mile long, formed of sand and stones. A citadel was begun in the last war on a hill, whence the castle might be bombarded, but since the peace left off.

Mount Orgueil castle, called also *Gourray* from the neighbouring village of that name, lies to the south of Rosel harbour in the bay of St Catharine. It was a place of strength before Henry Vth's time, and bid defiance to the attempts of the French under the constable De Guesclin 1374 at the end of the reign of Edward III. It was repaired by Queen Elizabeth, but is now neglected, yet preserves an air of grandeur answering its name even in ruins. The ascent to its top is by near 200 steps; and from thence by a telescope may be seen the two front towers of the cathedral of Coutance. The famous William Fyenne was confined in it three years.

The island is divided into 12 parishes, which are so laid out that each has a communication with the sea; these are subdivided into 52 vintaines, so called from the number of 20 houses which each is supposed to have

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Jersey. formerly contained, just as in England 10 houses anciently made a tything. The whole number of inhabitants is computed at about 20,000, of which 3000 are able to bear arms, and are formed into regiments. Their general review is on the sandy bay between the two towns, when they are attended with a train of above 20 brass field-pieces and two small bodies of horse in the wings.

The chief officer is the governor, who has the custody of his majesty's castles, with the command of the garrisons and militia. The civil government is administered by a bailiff, assisted by 12 jurats. They have here also what they call an assembly of the states. These are convened by the governor or his deputy, the bailiff consists of himself and the jurats, the dean and clergy, and the 12 high constables.

There were formerly many druidical temples and altars in Jersey, some remains of which are still to be seen. The cromlechs are here called *pouquelays*, and there are some tumuli and keeps. Roman coins have also been dug up in this island; and there are the remains of a Roman camp in the manor of Dilamant. Christianity was first planted here in the middle of the 6th century, and the island made part of the see of Dol in Bretagne, and it is now governed by a dean. Besides the abbey of St Helier, here were four priories, *Noirmont*, *St Clement*, *Bonnenuit*, and *le Leek*, and above twenty chapels, now mostly ruined. During the last war this island, together with that of Guernsey, became an object of desire to France, whose vanity, no less than her interest, was concerned in depriving Britain of those last remnants of her continental possessions. The first attempt to achieve this conquest took place in the year 1779. A force of 5000 or 6000 men was embarked in flat-bottomed boats, and endeavoured to land in the bay of St Ouen, on the first of May. In this attempt they were supported by five frigates and other armed vessels; but met with such a vigorous resistance from the militia of the island, assisted by a body of regulars, that they were compelled to retire without having landed a single person. Much discontent and mutual recrimination took place among the French naval and military officers on this failure; and though the expedition was represented by many as ill concerted, and destitute of every hope of success, another attempt was resolved on. Both the troops and seamen that had been employed in the former expedition were equally desirous of retrieving their honour; but they were for some time prevented from making any attempt of this kind by bad weather; and, before another opportunity offered, the squadron which was designed to cover their descent was attacked by Sir James Wallace, who drove them ashore on the coast of Normandy, silenced a battery under whose guns they had taken shelter, captured a frigate of 34 guns, with two rich prizes, burnt two other large frigates, and a considerable number of smaller vessels.

Thus the scheme of invading the island of Jersey was totally disconcerted, and laid aside for that time, but was resumed in the year 1781. The conduct of this second expedition was given to the baron de Rullecourt, who had been second in command when the former attempt was made. He was a man of courage, but fierce and violent in his disposition, and seems to have been very deficient in the prudence and conduct

Jersey. necessary for bringing any military enterprise to a successful issue. The force entrusted to him on the present occasion consisted of 2000 men; with whom he embarked in very tempestuous weather, hoping that he might thus be able to surprise the garrison. Many of his transports, however, were thus dispersed, and he himself, with the remainder, obliged to take shelter in some islands in the neighbourhood of Jersey. As soon as the weather grew calmer, he seized the opportunity of a dark night to effect landing at a place called Grouville, where he made prisoners of a party of militia. Hence he proceeded with the utmost expedition to St Helier's, the capital of the island, about three miles distant. His arrival was so unexpected, that he seized on a party of men who guarded it, together with the commanding officer, and the magistrates of the island. Rullecourt then drew up a capitulation, the terms of which were, that the island should be instantly surrendered to the French, and the garrison be sent to England; threatening the town with immediate destruction in case of noncompliance. It was in vain represented to him that no act of the deputy-governor and magistrates could be valid while they remained in his power; but, as Rullecourt still insisted, they were obliged to comply, least his menaces should have been carried into execution. This point being gained, he advanced to Elizabeth Castle in the neighbourhood of the town, summoning it to surrender in virtue of the capitulation for the town and island just concluded. To this a peremptory refusal was given, and followed by such a vigorous discharge of artillery, that he was obliged to retire into the town. In the mean time the British troops stationed in the island began to assemble from every quarter under the command of Major Pierfon; who, on being required by the French commander to submit, replied, that if the French themselves did not, within 20 minutes, lay down their arms, he would attack them. This being refused, an attack was instantly made with such impetuosity, that the French were totally routed in less than half an hour, and driven into the market-place, where they endeavoured to make a stand. Their commander, exasperated at this unexpected turn of affairs, endeavoured to wreak his vengeance on the captive governor, whom he obliged to stand by his side during the whole time of the conflict. This, however, was quickly over; the French were broken on all sides, the baron himself mortally wounded, and the next in command obliged to surrender himself and the whole party prisoners of war; while the captive governor escaped without a wound. This second disaster put an end to all hopes of the French ministry of being able to reduce the island of Jersey, and was indeed no small mortification to them; 800 troops having been landed at that time, of which not one escaped. A monument was erected at the public expence in the church of St Helier, to the memory of Major Pierfon, to whom the deliverance of the island was owing; but who unhappily fell in the moment of victory, when only 24 years of age.

All the landing-places and creeks round the island are now fortified with batteries, and 17 or 18 watch-houses are erected on the headlands. These are round towers with embrasures for small cannon and loop-holes for small musketry; the entrance by a door in the wall.

Jersey. wall out of the reach of man, and to be ascended by a ladder afterwards drawn up. This island, with those of Guernsey, Sark, Alderney, and their appendages, were parcel of the duchy of Normandy, and were united to the crown of England by the first princes of the Norman line. The language of the pulpit, and the bar, is the French, which is also that generally spoken by the people at large. They are governed by their own laws, which are for the most part the ducal customs of Normandy, being collected in an ancient book of customs intitled *Le grand coutumier*. The king's writ, or process from the courts of Westminster, is here of no force; but his commission is. They are not bound by any common acts of our parliaments, unless particularly named. All causes are originally determined by their own officers, the bailiff and jurats of the islands. But an appeal lies from them to the king and council in the last resort.—Jersey is an earldom in the Villiers's family.

New Jersey, or, as it is commonly called, *the Jerseys* (being two provinces united into one government), one of the united states of North America, lying from 39 to 41 degrees of north latitude, and from 74 to 75 degrees 30 minutes longitude west from London; in length 160 miles, in breadth 52.

It is bounded on the east by Hudson's river and the sea; on the south, by the sea; on the west, by Delaware bay and river, which divides it from the states of Delaware and Pennsylvania; and on the north, by a line drawn from the mouth of Mahakamak river, in latitude 41° 24', to a point on Hudson's river, in latitude 41°; containing about 8320 square miles, equal to 5,324,800 acres. New Jersey is divided into 13 counties, which are subdivided into 94 townships or precincts. In 1784, a census of the inhabitants was made by order of the legislature, when they amounted to 140,435, of which 10,501 were blacks. Of these blacks 1939 only were slaves; so that the proportion of slaves to the whole of the inhabitants in the state is as one to seventy-six. The population for every square mile is eighteen. As to the face of the country, soil, and productions; the counties of Sussex, Morris, and the northern part of Bergen, are mountainous. As much as five-eighths of most of the southern counties, or one fourth of the whole state, is a sandy barren, unfit for cultivation. The land on the sea coast in this, like that in the more southern states, has every appearance of *made ground*. The soil is generally a light sand; and by digging, on an average, about fifty feet below the surface (which can be done, even at the distance of twenty or thirty miles from the sea, without any impediment from rocks or stones), you come to salt marsh. This state has all the varieties of soil from the worst to the best kind. It has a greater proportion of *barrens* than any of the states. The *barrens* produce little else but shrub oaks and white and yellow pines. In the hilly and mountainous parts of the state, which are not too rocky for cultivation, the soil is of a stronger kind, and covered in its natural state with flatly oaks, hickories, chestnuts, &c. &c. and, when cultivated, produces wheat, rye, Indian corn, buck wheat, oats, barley, flax, and fruits of all kinds common to the climate. The land in this hilly country is good for grazing, and the farmers feed great numbers of cattle for New York and

Philadelphia markets, and many of them keep large dairies. The markets of New York and Philadelphia receive a very considerable proportion of their supplies from the contiguous parts of New Jersey. And it is worthy of remark that these contiguous parts are exceedingly well calculated, as to the nature and fertility of their soils, to afford these supplies; and the intervention of a great number of navigable rivers and creeks renders it very convenient to market their produce. These supplies consist of vegetables of many kinds, apples, pears, peaches, plums, strawberries, cherries, and other fruits; cyder in large quantities and of the best quality, butter, cheese, beef, pork, mutton, and the lesser meats.

The trade of this state is carried on almost solely with and from those two great commercial cities, New York on one side, and Philadelphia on the other; though it wants not good ports of its own. The articles exported, besides those already mentioned, are wheat, flour, horses, live cattle, hams, which are celebrated as being the best in the world, lumber, flax, seed, leather, and iron in great quantities in pigs and bars. Formerly copper ore was reckoned among their most valuable exports; but the mines have not been worked since the commencement of the late war. The iron manufacture is the greatest source of wealth to the state. Iron works are erected in Gloucester, Burlington, Morris, and other counties. The mountains in the county of Morris give rise to a number of streams necessary and convenient for these works, and at the same time furnish a copious supply of wood and ore of a superior quality. In this county alone are no less than seven rich iron mines, from which might be taken ore sufficient to supply the United States; and to work it into iron are two furnaces, two rolling and slitting mills, and about thirty forges, containing from two to four fires each. These works produce annually about 540 tons of bar iron, 800 tons of pigs, besides large quantities of hollow ware, sheet iron, and nail rods. In the whole state, it is supposed there is yearly made about 12000 tons of bar iron, 1200 do. of pigs, 80 do. of nail rods, exclusive of hollow ware, and various other castings, of which vast quantities are made.

The character, manners, and customs of the people are various in different parts of the state. The inhabitants are a collection of Low Dutch, Germans, English, Scotch, Irish, and New Englanders, or their descendants. National attachment and mutual convenience have generally induced these several kinds of people to settle together in a body; and in this way their peculiar national manners, customs, and character, are still preserved, especially among the lower class of people, who have little intercourse with any but those of their own nation. Religion, although its tendency is to unite people in those things that are essential to happiness, occasions wide differences as to manners, customs, and even character. The Presbyterian, the Quaker, the Episcopalian, the Baptist, the German and Low Dutch Calvinist, the Methodist, and the Moravian, have each their distinguishing characteristics, either in their worship, their discipline, or their dress. There is still another very perceptible characteristic difference, distinct from either of the others, which arises from the intercourse of the inhabitants

Jersey. bitants with different states. The people in West Jersey trade to Philadelphia, and of course imitate their fashions, and imbibed their manners. The inhabitants of East Jersey trade to New York, and regulate their fashions and manners according to those of New York. So that the difference in regard to fashions and manners between East and West Jersey, is nearly as great as between New York and Philadelphia. The people of New Jersey are generally industrious, frugal, and hospitable. There are, comparatively, but few men of learning in the state, nor can it be said that the people in general have a taste for the sciences. The lower class, in which may be included three-fifths of the inhabitants of the whole state, are ignorant, and are criminally neglectful in the education of their children. There are, in this state, about 50 Presbyterian congregations, subject to the care of three Presbyteries, viz. that of New York, of New Brunswick, and Philadelphia; 40 congregations of the Friends; 30 of the Baptists; 25 of Episcopalians; 28 of the Dutch, besides a few Moravians and Methodists.

There are two colleges in New Jersey; one at Princeton, called *Nassau Hall*; the other at Brunswick, called *Queen's-college*. The college at Princeton was first founded about the year 1738, and enlarged by governor Belcher in 1747. It has an annual income of about L. 900 currency; of which L. 200 arises from funded public securities and lands, and the rest from the fees of the students. There is a grammar-school of about 30 scholars, connected with the college, under the superintendence of the president, and taught by two masters. Before the late revolution this college was furnished with a philosophical apparatus worth L. 500, which (except the elegant orrery constructed by Mr Rittenhouse) was almost entirely destroyed during the war, as was also the library, which now consists of between 2000 and 3000 volumes.—The charter for Queen's-college at Brunswick was granted just before the war, in consequence of an application from a body of the Dutch church. Its funds, raised wholly by free donations, amounted soon after its establishment to four thousand pounds; but they were considerably diminished by the war. The students are under the care of a president. This college has lately increased both in numbers and reputation. There are also a number of flourishing academies in this state; one at Trenton, another in Hakkensak, others at Orangedale, Freehold, Elizabeth-town, Burlington, Newark, Springfield, Morristown, Bordentown, and Amboy: but there are no regular establishments for common schools. The usual mode of education is for the inhabitants of a village or neighbourhood to join in affording a temporary support for a schoolmaster, upon such terms as is mutually agreeable. But the encouragement which these occasional teachers meet with, is generally such as that no person of abilities adequate to the business will undertake it, and of course little advantage is derived from these schools.

There are a number of towns in this state, nearly of equal size and importance, and none that has more than 200 houses, compactly built.—*Trenton* is the largest town in New Jersey. This town, with Lambertson, which joins it on the south, contains 200 houses, and about 1500 inhabitants. Here the legislature

meets, the supreme court sits, and the public offices are all kept, except the secretary's, which is at Burlington. On these accounts it is considered as the capital of the state.—*Burlington* stands on the east side of the Delaware, 20 miles above Philadelphia by water, and 17 by land. The island, which is the most populous part of the city, is a mile and a quarter in length, and three quarters of a mile in breadth. On the island are 160 houses, 900 white and 100 black inhabitants. There are two houses for public worship in the town, one for the Friends or Quakers, who are the most numerous, and one for the Episcopalians. The other public buildings are two market-houses, a court-house, and the best gaol in the state. Besides these, there is an academy, a free school, a nail manufactory, and an excellent distillery, if that can be called excellent which produces a poison both of health and morals.—*Perth Amboy* stands on a neck of land included between Raritan river and Arthur Kull sound. It lies open to Sandy Hook, and has one of the best harbours on the continent. Vessels from sea may enter it in one tide, in almost any weather.—*Brunswick* was incorporated in 1784, and is situated on the south-west side of Raritan river, 12 miles above Amboy. It contains about 200 houses and 1600 inhabitants, one half of which are Dutch. Its situation is low and unpleasant, being on the bank of the river, and under a high hill which rises back of the town.—*Princeton* is a pleasant healthy village, of about 80 houses, 52 miles from New York, and 43 from Philadelphia.—*Elizabeth town* and *Newark* are pleasant towns; the former is 15, and the latter 9 miles from New York. Newark is famed for its good cyder.

The government of this state is vested in a governor, legislative council, and general assembly. The governor is chosen annually by the council and assembly jointly. The legislative council is composed of one member from each county, chosen annually by the people. The general assembly is composed of three members from each county, chosen by the freemen. The council choose one of their members to be vice-president, who, when the governor is absent from the state, possesses the supreme executive power. The council may originate any bills, excepting preparing and altering any money bill, which is the sole prerogative of the assembly.

The first settlers of New Jersey were a number of Dutch emigrants from New York, who came over between the years 1614 and 1620, and settled in the county of Bergen. Next after these, in 1627, came over a colony of Swedes and Finns, and settled on the river Delaware. The Dutch and Swedes, though not in harmony with each other, kept possession of the country many years. In March 1634, Charles II. granted all the territory called by the Dutch *New Netherlands*, to his brother the duke of York. And in June 1664, the duke granted that part now called *New Jersey* to Lord Berkeley of Stratton, and Sir George Carteret, jointly; who in 1665 agreed upon certain concessions with the people for the government of the province, and appointed Philip Carteret, Esq; their governor.—The Dutch reduced the country in 1672; but it was restored by the peace of Westminster, February 9. 1674.

This state was the seat of war for several years, during

Jersey,
Jerusalem.

ring the bloody contest between Great Britain and America; and her losses, both of men and property, in proportion to the population and wealth of the state, was greater than of any other of the thirteen states.

JERSEY, among woolcombers, denotes the finest wool, taken from the rest by dressing it with a Jersey comb.

* See E-
gypt, n° 2.

JERUSALEM, a very famous and ancient city, capital of Judea or Palestine, now a province of Turkey in Asia. According to Manetho, an Egyptian historian, it was founded by the shepherds who invaded Egypt in an unknown period of antiquity*. According to Josephus, it was the capital of Melchisedek's kingdom, called *Salem* in the book of Genesis: and the Arabians assert, that it was built in honour of Melchisedek by 12 neighbouring kings; which when they had done, he called it *Jerusalem*. We know nothing of it with certainty, however, till the time of king David, who took it from the Jebusites, and made it the capital of his kingdom, which it ever after continued to be. It was first taken in the days of Jehoash, by Hazael the king of Syria, who slew all the nobility, but did not destroy their city. It was afterwards taken by Nebuchadnezzar king of Babylon, who destroyed it, and carried away the inhabitants. Seventy years after, permission was granted by Cyrus king of Persia to the Jews to rebuild their city, which was done; and it continued the capital of Judea (though frequently suffering much from the Grecian monarchs of Syria and Egypt), till the time of Vespasian emperor of Rome, by whose son Titus it

† See Jeru.

was totally destroyed†. It was, however, rebuilt by Adrian; and seemed likely to have recovered its former grandeur, being surrounded with walls, and adorned with several noble buildings; the Christians also being permitted to settle in it. But this was a short-lived change; so that when the empress Helena, mother of Constantine the Great, came to visit this city, she found it in the most forlorn and ruinous situation. Having formed a design of restoring it to its ancient lustre, she caused, with a great deal of cost and labour, all the rubbish that had been thrown upon those places where our Saviour had suffered, been buried, &c. to be removed. In doing this, they found the cross on which he died, as well as those of the two malefactors who suffered with him; and, as the writers of those times relate, discovered by a miracle that which had borne the Saviour of mankind. She then caused a magnificent church to be built, which inclosed as many of the scenes of our Saviour's sufferings as could conveniently be done, and adorned the city with several other buildings. The Emperor Julian is said to have formed a design of rebuilding the temple of Jerusalem, and of restoring the Jewish worship. This scheme was contrived on purpose to give the lie to our Saviour's prophecy concerning the temple and city of Jerusalem; namely, that the first should be totally destroyed, without one stone being left upon another; and that Jerusalem should be trodden down of the Gentiles till the times of the Gentiles were fulfilled. In this attempt, however, according to the accounts of the Christian writers of that age, the emperor was frustrated by an earthquake and fiery eruption from the earth, which

totally destroyed the work, consumed the materials Jerusalem, which had been collected, and killed a great number of the workmen.

This event hath been the subject of much dispute. Mr Warburton, who hath published a treatise expressly on the truth of this fact, hath collected the following testimonies in favour of it. The first is that of Ammianus Marcellinus, who tells us, "Julian (having been already thrice consul), taking Sallust, prefect of the several Gauls, for his colleague, entered a fourth time on this high magistracy; and although his sensibility of the many and great events which this year was likely to produce made him very anxious for the future, yet he both pushed on the various and complicated preparatives for this expedition with the utmost application, and, having an eye in every quarter, and being desirous to eternize his reign by the greatness of his achievements, he projected to rebuild at an immense expence the proud and magnificent temple of Jerusalem; which (after many combats, attended with much bloodshed on both sides, during the siege by Vespasian) was with great difficulty taken and destroyed by Titus. He committed the conduct of this affair to Alypius of Antioch, who had formerly been lieutenant in Britain. When therefore this Alypius had set himself to the vigorous execution of his charge, in which he had all the assistance that the governor of the province could afford him, horrible balls of fire breaking out near the foundations, with frequent and reiterated attacks, rendered the place from time to time inaccessible to the scorched and blasted workmen; and the victorious element continuing, in this manner, obstinately and resolutely bent, as it were, to drive them to a distance, Alypius thought best to give over the enterprise."

The next testimony is that of Gregory Nazianzen. Speaking of the emperor Julian, he says, "After having run through a course of every other tyrannical experiment against the faith, and upon trial despising all of them as trifling and contemptible, he at last brought down the whole body of the Jews upon us; whom, for their ancient turn to seditious novelties, and an inveterate hatred of the Christian name, he chose as the fittest instrument for his machinations. These, under a show of great good-will, which hid his secret purpose, he endeavoured to convince from their sacred books and traditions, which he took upon him to interpret, that now was come the time foretold, when they should return to their own land, rebuild their temple, and restore the law to its ancient force and splendor. When these things had been thoroughly insinuated, and heartily entertained (for deceit finds easy admittance when it flatters our passions), the Jews set upon the work of rebuilding with great attention, and pushed on the project with the utmost labour and application. But when, now driven from their work by a violent whirlwind and a sudden earthquake, they fled together for refuge to a certain neighbouring church (some to deprecate the impending mischief; others, as is natural in such cases, to catch at any help that presents itself; and others again, enveloped in the crowd, were carried along with the body of those who fled), there are who say,

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Jerusalem. the church refused them entrance; and that when they came to the doors which were wide open but a moment before, they found them on a sudden closed by a secret and invisible hand; a hand accustomed to work these wonders by the terror and confusion of the impious, and for the security and comfort of godly men. This, however, is now invariably affirmed and believed by all, that as they strove to force their way in by violence, the fire which burst from the foundations of the temple, met and stopped them. One part it burnt and destroyed, and another it desperately maimed, leaving them a living monument of God's commination and wrath against sinners. Thus the affair passed; and, let no man continue incredulous concerning this or the other miraculous works of God. But still the thing most wonderful and illustrious was, a light which appeared in the heavens, of a cross within a circle. That name and figure which impious men before esteemed so dishonourable upon earth, was now raised on high, and equally objected to the common view of all men; advanced by God himself as the trophy of his victory over unbelievers; of all trophies the most exalted and sublime. Nay further, they who were present, and partakers of the miracle we are now about to speak of, shew to this very day the sign or figure of the cross which was then marked or impressed upon their garments. For at that time, as these men (whether such as were of us or strangers) were showing these marks, or attending to others who showed them, each presently observed the wonder, either on himself or his neighbour; having a radiant mark on his body or on his garment, in which there is something that, in art and elegance, exceeded all painting or embroidery."

† See *Lightning*.

Notwithstanding these testimonies, however, this fact hath been strenuously contended by others; and indeed it must be owned that the testimonies above mentioned are by no means unexceptionable. In the last particularly, the propensity to the marvellous is so exceedingly great, that every one must at first sight be struck with it. It is true indeed, the most miraculous part of it, as it seemed to be to Gregory, namely, the appearance of crosses upon the garments and bodies of some of the people who were struck, may be explained upon a natural principle; since we are assured that lightning will sometimes produce effects of this kind†: but even this is no decisive proof of the authenticity of the relation; though it cannot by any means discredit it, as some think. On the whole, however, it is not a matter of any consequence whether this event happened with the circumstances above mentioned or not. If Julian did make any attempt to rebuild the temple, it is certain that something obstructed the attempt, because the temple was never actually rebuilt. If he made no such attempt, the prophecy of our Saviour still holds good; and it surely cannot be thought to detract from the merit of a prophecy, that no body ever attempted to elude it, or prove it to be a falsehood.

Jerusalem continued in the hands of the eastern emperors till the reign of the Caliph Omar, who reduced it under his subjection. The Saracens continued in possession of it till the year 1099, when it was taken by the Crusaders. They founded a new kingdom, of which Jerusalem was the capital, which lasted 88 years

under nine kings. At last this kingdom was utterly ruined by Saladin; and though the Christians once more got possession of the city, they were again obliged to relinquish it. In 1217, the Saracens were expelled by the Turks, who have ever since continued in possession of it.

The city of Jerusalem, in its most flourishing state, was divided into four parts, each inclosed with its own walls; viz. 1. The old city of Jebus, which stood on mount Zion, where the prophets dwelt, and where David built a magnificent castle and palace, which became the residence both of himself and successors; on which account it was emphatically called, *the City of David*. 2. The lower city, called also *the Daughter of Zion*, being built after it; on which stood the two magnificent palaces which Solomon built for himself and his queen; that of the Maccabean princes; and the stately amphitheatre built by Herod, capable of containing 80,000 spectators; the strong citadel, built by Antiochus, to command and overtop the temple, but afterwards razed by Simon the Maccabee, who recovered the city from the Syrians; and lastly, a second citadel, built by Herod, upon a high and craggy rock, and called by him *Antonia*. 3. The new city, mostly inhabited by tradesmen, artificers, and merchants; and, 4. Mount Moriah, on which was built the so famed temple of Solomon, described in the sixth and seventh chapters of the second book of Kings; and, since then, that rebuilt by the Jews on their return from Babylon, and afterwards built almost anew and greatly adorned and enriched by Herod.

Some idea of the magnificence of this temple may be had from the following considerations. 1. That there were no less than 163,300 men employed in the work. 2. That notwithstanding that prodigious number of hands, it took up seven whole years in building. 3. That the height of this building was 120 cubits, or 82 yards, rather more than less; and the courts round it about half as high. 4. That the front, on the east side, was sustained by ramparts of square stone, of vast bulk, and built up from the valley below, which last was 300 cubits high, and being added to that of the edifice amounted to 420 cubits; to which, if we add, 5. The height of the principal tower above all the rest, viz. 60, will bring it to 480 cubits, which, reckoning at two feet to a cubit, will amount to 960 feet; but, according to the length of that measure, as others reckon it, viz. at two feet and an half, it will amount to 1200 feet; a prodigious height this from the ground, and such as might well make Josephus say, that the very design of it was sufficient to have turned the brain of any but Solomon. 6. These ramparts, which were raised in this manner, to fill up the prodigious chasm made by the deep valley below, and to make the area of a sufficient breadth and length for the edifice, were 1000 cubits in length at the bottom, and 800 at the top, and the breadth of them 100 more. 7. The huge buttresses which supported the ramparts were of the same height, square at the top, and 50 cubits broad, and jutted out 150 cubits at the bottom. 8. The stones, of which they were built, were, according to Josephus, 40 cubits long, 12 thick, and 8 high, all of marble, and so exquisitely joined, that they seemed one continued piece, or rather polished rock. 9. According

Jerusalem. cording to the same Jewish historian, there were 1453 columns of Parian marble, and twice that number of pilasters; and of such thickness, that three men could hardly embrace them, and their height and capitals proportionable, and of the Corinthian order. But it is likely Josephus hath given us these two last articles from the temple of Herod, there being nothing like them mentioned by the sacred historians, but a great deal about the prodigious cedars of Lebanon used in that noble edifice, the excellent workmanship of them adapted to their several ends and designs, together with their gildings and other curious ornaments. The only thing more we shall venture to add is, what is affirmed in Scripture, that all the materials of this stupendous fabric were finished and adapted to their several ends before they were brought to Jerusalem, that is, the stones in their quarries, and the cedars in Lebanon; so that there was no noise of ax, hammer, or any tool, heard in the rearing of it.

At present Jerusalem is called by the Turks *Cud-sembaric*, and *Coud/beriff*; and is reduced to a poor thinly-inhabited town, about three miles in circumference. situated on a rocky mountain, surrounded on all sides, except the north, with steep ascents and deep valleys; and these again environed with other hills, at some distance from them. In the neighbourhood of the city there grow some corn, vines, olives, &c. The stately church erected by the empress Helena, on mount Calvary, is still standing. It is called the *church of the sepulchre*; and is kept in good repair by the generous offerings of a constant concourse of pilgrims, who annually resort to it, as well as by the contributions of several Christian princes. The walls of this church are of stone, and the roof of cedar; the east end incloses Mount Calvary, and the west the holy sepulchre: the former is covered with a noble cupola, open at top, and supported by 16 massive columns. Over the high altar, at the east end, is another stately dome. The nave of the church constitutes the choir; and in the inside isles are shown the places where the most remarkable circumstances of our Saviour's passion were transacted, together with the tombs of Godfrey and Baldwin, the two first Christian kings of Jerusalem. In the chapel of the crucifixion is shown the very hole in the rock in which the cross is said to have been fixed. The altar in this chapel hath three crosses on it; and is richly adorned, particularly with four lamps of immense value that hang before it, and are kept constantly burning. At the west end is that of the sepulchre, which is hewn in that form out of the solid rock, and hath a small dome supported by pillars of porphyry. The cloister round the sepulchre is divided into sundry chapels, appropriated to the several sorts of Christians who reside there; as Greeks, Armenians, Maronites, Jacobites, Copts, Abyssines, Georgians, &c. and on the north-west side of it are the apartments of the Latins, who have the care of the church, and are forced to reside constantly in it; the Turks keeping the keys of it, and not suffering any of them to go out, but obliging them to receive their provisions in at a wicket. At Easter there are some grand ceremonies performed in the church, representing our Lord's passion, crucifixion, death, and resurrection, at which a vast concourse of pilgrims commonly assist. For a particular account of

them, we refer the reader to Doctors Shaw and Pococke.

On Mount Moriah, on the south-east part of the city, is an edifice called *Solomon's Temple*, standing on or near the same spot as the ancient; but when or by whom erected is uncertain. In the midst of it is a Turkish mosque, where the Jewish sanctorum sanctorum is supposed to have stood. The building, which Dr Pococke thinks must have been formerly a Christian church, is held in the utmost veneration by the Turks.

The city is now under the government of a sangiac, who resides in a house said to have been that of Pontius Pilate, over-against the castle of Antonia built by Herod the Great. Many of the churches erected in memory of some remarkable gospel-transaction, have been since converted into mosques; into some of which money will procure admittance, but not into others. Both the friars and other Christians are kept so poor by the tyranny of the government, that the chief support and trade of the place consists in providing strangers with food and other accommodations, and selling them beads, relics, and other trinkets, for which they are obliged to pay considerable sums to the sangiac, as well as to his officers; and those are seldom so well contented with their usual duties, but they frequently extort some fresh ones, especially from the Franciscans, whose convent is the common receptacle for all pilgrims, and for which they have considerable allowances from the pope, and other crowned heads, besides the presents which strangers generally make them at their departure. The most remarkable antiquities in the neighbourhood of Jerusalem are, 1. The pools of Bethesda and Gihon; the former 120 paces long, 40 broad, and at least eight deep, but now without water; and the old arches, which it still discovers at the west end, are quite dammed up: the other, which is about a quarter of a mile without Bethlehem-gate, is a very stately relic, 106 paces long, and 60 broad, lined with a wall and plaster, and still well stored with water. 2. The tomb of the Virgin Mary, in the valley of Jehoshaphat, into which one descends by a magnificent flight of 47 steps. On the right hand as one goes down, is also the sepulchre of St Ann the mother, and on the left that of Joseph the husband, of the virgin-mother: some add likewise that of Jehoia-kim her father. In all these are erected altars for priests of all sorts to say mass, and the whole is cut into the solid rock. 3. The tomb of king Jehoshaphat, cut likewise into the rock, and divided into several apartments; in one of which is his tomb, which is adorned with a stately portico and entablature over it. 4. That commonly called *Abfalom's pillar* or *place*, as being generally supposed to be that which he is said to have erected in his life-time to perpetuate his memory, as he had no male-issue. The place, however, both within and without, hath more the resemblance of a sepulchre than any thing else: though we do not read that he was buried there, neither do the people here affirm that he was. There is a great heap of stones about it, which is continually increasing; the superstitious Jews and Turks always throwing some as they pass, in token of their abhorrence of Abfalom's unnatural rebellion against so good and holy a parent. The structure itself is about 20 cubits square, and 60 high, rising in a lofty square, adorned below with four columns.

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columns of the Ionic order, with their capitals, entablatures, &c. to each front. From the height of 20 to 40 cubits, it is somewhat less, and quite plain, excepting a small fillet at the upper end; and from 40 to the top it changes into a round, which grows gradually into a point, the whole cut out of the solid rock. There is a room within, considerably higher than the level of the ground without, on the sides of which are niches, probably to receive coffins. 5. A little eastward of this is that called the *tomb of Zechariah*, the son of Barachiah, whom the Jews slew between the temple and the altar, as is commonly supposed. This fabric is all cut out of the natural rock, 18 feet high, and as many square; and adorned with Ionic columns on each front, cut out likewise of the same rock, and supporting a cornice. The whole ends in a pointed top, like a diamond. But the most curious, grand, and elaborate pieces, in this kind, are the grotts without the walls of Jerusalem, styled the *royal sepulchres*; but of what kings is not agreed on. They consist of a great number of apartments, some of them spacious, all cut out of the solid marble rock; and may justly be pronounced a royal work, and one of the most noble, surprising, and magnificent. For a particular account of them we must refer the reader, for want of room, to Pococke's Travels. In the neighbourhood of Jerusalem is a spot of ground, about 30 yards long and 15 broad, now the burying-place of the Armenians, which is shown as the *Aceldama*, or *Field of Blood*, formerly the *Potter's Field*, and since styled *Campo Santo*, or the *Holy Field*, purchased with the price of Judas's treason, for the burial of strangers. It is walled round, to prevent the Turks abusing the bones of Christians; and one half of it is taken up by a building in the nature of a charnel house. Besides the above, a great many other antiquities in the city and its environs are shown to strangers; there being scarce any place or transaction mentioned either in the Old or New Testament, but they show the very spot of ground where the one stood, and the other was done; not only here, but all over Judæa.

JESI, an ancient town of Italy, in the territory of the church, and in the marca or march of Ancona, with a bishop's see. It is seated on a mountain, near a river of the same name, in E. Long. 12. 20. N. Lat. 43. 50.

JESSO, JEDSO, or *Yadso*, a large island of Asia to the north of Nippon, and said to be governed by a prince tributary to the empire of Japan; but is very little known to the Europeans, so that nothing can be said with certainty concerning it.

JESSES, ribbons that hang down from garlands or crowns in falconry; also short straps of leather fastened to the hawk's legs, and so to verrels.

JESTING, or *concise wit*, as distinguished from continued wit or humour, lies either in the thought, or the language, or both. In the first case it does not depend upon any particular words or turn of the expression. But the greatest fund of jests lies in the language, *i. e.* in tropes or verbal figures; those afforded by tropes consist in the metaphorical sense of the words, and those of verbal figures principally turn upon a double sense of the same word, or a similitude of sound in different words. The third kind of jokes, which lie both in the sense and language, arise from figures of

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sentences, where the figure itself consists in the sense, but the wit turns upon the choice of the words.

JESUITS, or *the Society of Jesus*; a famous religious order of the Romish church, founded by Ignatius Loyola. See IGNATIUS.—The plan which this fanatic formed of its constitution and laws was suggested, as he gave out, and as his followers still teach, by the immediate inspiration of heaven. But notwithstanding this high pretension, his design met at first with violent opposition. The pope, to whom Loyola had applied for the sanction of his authority to confirm the institution, referred his petition to a committee of cardinals. They represented the establishment to be unnecessary as well as dangerous, and Paul refused to grant his approbation of it. At last, Loyola removed all his scruples by an offer which it was impossible for any pope to resist. He proposed, that besides the three vows of poverty, of chastity, and of monastic obedience, which are common to all the orders of regulars, the members of his society should take a fourth vow of obedience to the pope, binding themselves to go whithersoever he should command for the service of religion, and without requiring any thing from the holy see for their support. At a time when the papal authority had received such a shock by the revolt of so many nations from the Romish church; at a time when every part of the popish system was attacked with so much violence and success, the acquisition of a body of men, thus peculiarly devoted to the see of Rome, and whom it might set in opposition to all its enemies, was an object of the highest consequence. Paul instantly perceiving this, confirmed the institution of the Jesuits by his bull, granted the most ample privileges to the members of the society, and appointed Loyola to be the first general of the order. The event hath full justified Paul's discernment, in expecting such beneficial consequences to the see of Rome from this institution. In less than half a century, the society obtained establishments in every country that adhered to the Roman catholic church: its power and wealth increased amazingly; the number of its members became great; their character as well as accomplishments were still greater; and the Jesuits were celebrated by the friends and dreaded by the enemies of the Romish faith as the most able and enterprising order in the church.

The constitution and laws of the society were perfected by Laynez and Aquaviva, the two generals who succeeded Loyola, men far superior to their master in abilities and in the science of government. They framed that system of profound and artful policy which distinguishes the order. The large infusion of fanaticism mingled with its regulation should be imputed to Loyola its founder. Many circumstances concurred in giving a peculiarity of character to the order of Jesuits, and in forming the members of it not only to take greater part in the affairs of the world than any other body of monks, but to acquire superior influence in the conduct of them.

The primary object of almost all the monastic orders is to separate men from the world, and from any concern in its affairs. In the solitude and silence of the cloister, the monk is called to work out his own salvation by extraordinary acts of mortification and piety. He is dead to the world, and ought not to mingle

^{Jesuits.} in its transactions. He can be of no benefit to mankind but by his example and by his prayers. On the contrary, the Jesuits are taught to consider themselves as formed for action. They are chosen soldiers, bound to exert themselves continually in the service of God, and of the pope his vicar on earth. Whatever tends to instruct the ignorant, whatever can be of use to reclaim or to oppose the enemies of the holy see, is their proper object. That they may have full leisure for this active service, they are totally exempted from those functions the performance of which is the chief business of other monks. They appear in no processions; they practise no rigorous austerities; they do not consume one half of their time in the repetition of tedious offices: but they are required to attend to all the transactions of the world, on account of the influence which these may have upon religion; they are directed to study the dispositions of persons in high rank, and to cultivate their friendship; and by the very constitution as well as genius of the order, a spirit of action and intrigue is infused into all its members.

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Peculiarities in its policy.

As the object of the society of Jesuits differed from that of the other monastic orders, the diversity was no less in the form of its government. The other orders are to be considered as voluntary associations, in which whatever affects the whole body is regulated by the common suffrage of all its members. The executive power is vested in the persons placed at the head of each convent or of the whole society; the legislative authority resides in the community. Affairs of moment, relating to particular convents, are determined in conventual chapters; such as respect the whole order are considered in general congregations. But Loyola, full of the ideas of implicit obedience, which he had derived from his military profession, appointed that the government of his order should be purely monarchical. A general, chosen for life by deputies from the several provinces, possessed power that was supreme and independent, extending to every person and to every case. He, by his sole authority, nominated provincials, rectors, and every other officer employed in the government of the society, and could remove them at pleasure. In him was vested the sovereign administration of the revenues and funds of the order. Every member belonging to it was at his disposal; and by his uncontrollable mandate he could impose on them any task, or employ them in what service soever he pleased. To his commands they were required to yield not only outward obedience, but to resign up to him the inclinations of their own wills and the sentiments of their own understandings. They were to listen to his injunctions as if they had been uttered by Christ himself. Under his direction they were to be mere passive instruments, like clay in the hands of the potter, or like dead carcases incapable of resistance. Such a singular form of policy could not fail to impress its character on all the members of the order, and to give a peculiar force to all its operations. There is not, in the annals of mankind, any example of such a perfect despotism, exercised not over monks shut up in the cells of a convent, but over men dispersed among all the nations of the earth.

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Power of the general.

As the constitutions of the order vest in the general such absolute dominion over all its members, they care-
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fully provide for his being perfectly informed with respect to the character and abilities of his subjects. Every novice who offers himself as a candidate for entering into the order, is obliged to manifest his conscience to the superior, or a person appointed by him; and is required to confess not only his sins and defects, but to discover the inclinations, the passions, and the bent of his soul. This manifestation must be renewed every six months. The society, not satisfied with penetrating in this manner into the innermost recesses of the heart, directs each member to observe the words and actions of the novices: they are constituted spies upon their conduct, and are bound to disclose every thing of importance concerning them to the superior. In order that this scrutiny into their character may be as complete as possible, a long novitiate must expire, during which they pass through the several gradations of ranks in the society; and they must have attained the full age of thirty-three years before they can be admitted to take the final vows, by which they become professed members. By these various methods, the superiors, under whose immediate inspection the novices are placed, acquire a thorough knowledge of their dispositions and talents. In order that the general, who is the soul that animates and moves the whole society, may have under his eye every thing necessary to inform or direct him, the provincials and heads of the several houses are obliged to transmit to him regular and frequent reports concerning the members under their inspection. In these they descend into minute details with respect to the character of each person, his abilities natural or acquired, his temper, his experience in affairs, and the particular department for which he is best fitted. These reports, when digested and arranged, are entered into registers kept of purpose, that the general may, at one comprehensive view, survey the state of the society in every corner of the earth; observe the qualifications and talents of its members; and thus choose, with perfect information, the instruments which his absolute power can employ in any service for which he thinks meet to destine them.

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As it was the professed intention of the order of Jesuits to labour with unwearied zeal in promoting the power and influence of the order, the salvation of men, this engaged them of course in many active functions. From their first institution, they considered the education of youth as their peculiar province; they aimed at being spiritual guides and confessors; they preached frequently in order to instruct the people; they set out as missionaries to convert unbelieving nations. The novelty of the institution, as well as the singularity of its objects, procured the order many admirers and patrons. The governors of the society had the address to avail themselves of every circumstance in its favour; and in a short time the number as well as influence of its members increased wonderfully. Before the expiration of the sixteenth century, the Jesuits had obtained the chief direction of the education of youth in every catholic country in Europe. They had become the confessors of almost all its monarchs; a function of no small importance in any reign, but, under a weak prince, superior even to that of minister. They were the spiritual guides of almost every person eminent for rank or power. They possessed the highest degree of confidence and interest with the papal court, as the most

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zealous and able champions for its authority. The advantages which an active and enterprising body of men might derive from all these circumstances are obvious. They formed the minds of men in their youth. They retained an ascendant over them in their advanced years. They possessed, at different periods, the direction of the most considerable courts in Europe. They mingled in all affairs. They took part in every intrigue and revolution. The general, by means of the extensive intelligence which he received, could regulate the operations of the order with the most perfect discernment; and, by means of his absolute power, could carry them on with the utmost vigour and effect.

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Of its
wealth.

Together with the power of the order, its wealth continued to increase. Various expedients were devised for eluding the obligation of the vow of poverty. The order acquired ample possessions in every catholic country; and by the number as well as magnificence of its public buildings, together with the value of its property, moveable or real, it vied with the most opulent of the monastic fraternities. Besides the sources of wealth common to all the regular clergy, the Jesuits possessed one which was peculiar to themselves. Under pretext of promoting the success of their missions, and of facilitating the support of their missionaries, they obtained a special licence from the court of Rome to trade with the nations which they laboured to convert. In consequence of this, they engaged in an extensive and lucrative commerce both in the East and West Indies. They opened warehouses in different parts of Europe, in which they vended their commodities. Not satisfied with trade alone, they imitated the example of other commercial societies, and aimed at obtaining settlements. They acquired possession accordingly of a large and fertile province in the southern continent of America, and reigned as sovereigns over some hundred thousand subjects.

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Unhappily for mankind, the vast influence which the order of Jesuits acquired by all these different means, has been often exerted with the most pernicious effect. Such was the tendency of that discipline observed by the society in forming its members, and such the fundamental maxims in its constitution, that every Jesuit was taught to regard the interest of the order as the capital object to which every consideration was to be sacrificed. This spirit of attachment to their order, the most ardent perhaps that ever influenced any body of men, is the characteristic principle of the Jesuits, and serves as a key to the genius of their policy as well as the peculiarities in their sentiments and conduct.

As it was for the honour and advantage of the society that its members should possess an ascendant over persons in high rank or of great power; the desire of acquiring and preserving such a direction of their conduct with greater facility, has led the Jesuits to propagate a system of relaxed and pliant morality, which accommodates itself to the passions of men, which justifies their vices, which tolerates their imperfections, which authorises almost every action that the most audacious or crafty politician would wish to perpetrate.

As the prosperity of the order was intimately connected with the preservation of the papal authority,

the Jesuits, influenced by the same principle of attachment to the interests of their society, have been the most zealous patrons of those doctrines which tend to exalt ecclesiastical power on the ruins of civil government. They have attributed to the court of Rome a jurisdiction as extensive and absolute as was claimed by the most presumptuous pontiffs in the dark ages. They have contended for the entire independence of ecclesiastics on the civil magistrates. They have published such tenets concerning the duty of opposing princes who were enemies of the Catholic faith, as countenanced the most atrocious crimes, and tended to dissolve all the ties which connect subjects with their rulers.

Jesuits.

As the order derived both reputation and authority from the zeal with which it stood forth in defence of the Romish church against the attacks of the reformers, its members, proud of this distinction, have considered it as their peculiar function to combat the opinions and to check the progress of the Protestants. They have made use of every art, and have employed every weapon against them. They have set themselves in opposition to every gentle or tolerating measure in their favour. They have incessantly stirred up against them all the rage of ecclesiastical and civil persecution.

Monks of other denominations have indeed ventured to teach the same pernicious doctrines, and have held opinions equally inconsistent with the order and happiness of civil society. But they, from reasons which are obvious, have either delivered such opinions with greater reserve, or have propagated them with less success. Whoever recollects the events which have happened in Europe during two centuries, will find that the Jesuits may justly be considered as responsible for most of the pernicious effects arising from that corrupt and dangerous casuistry, from those extravagant tenets concerning ecclesiastical power, and from that intolerant spirit, which have been the disgrace of the church of Rome throughout that period, and which have brought so many calamities upon civil society.

But, amidst many bad consequences flowing from the institution of this order, mankind, it must be acknowledged, have derived from it some considerable advantages. As the Jesuits made the education of youth one of their capital objects, and as their first attempts to establish colleges for the reception of students were violently opposed by the universities in different countries, it became necessary for them, as the most effectual method of acquiring the public favour, to surpass their rivals in science and industry. This prompted them to cultivate the study of ancient literature with extraordinary ardour. This put them upon various methods for facilitating the instruction of youth; and, by the improvements which they made in it, they have contributed so much towards the progress of polite learning, that on this account they have merited well of society. Nor has the order of Jesuits been successful only in teaching the elements of literature; it has produced likewise eminent masters in many branches of science, and can alone boast of a greater number of ingenious authors than all the other religious fraternities taken together.

But it is in the new world that the Jesuits have exhibited

Jesuits.
to
Settlement
in Para-
guay.

hibited the most wonderful display of their abilities, and have contributed most effectually to the benefit of the human species. The conquerors of that unfortunate quarter of the globe had nothing in view but to plunder, to enslave, and to exterminate its inhabitants. The Jesuits alone have made humanity the object of their settling there. About the beginning of the last century, they obtained admission into the fertile province of Paraguay, which stretches across the southern continent of America, from the bottom of the mountains of Potosi to the confines of the Spanish and Portuguese settlements on the banks of the river de la Plata. They found the inhabitants in a state little different from that which takes place among men when they first begin to unite together; strangers to the arts, subsisting precariously by hunting or fishing, and hardly acquainted with the first principles of subordination and government. The Jesuits set themselves to instruct and to civilize these savages. They taught them to cultivate the ground, to rear tame animals, and to build houses. They brought them to live together in villages. They trained them to arts and manufactures. They made them taste the sweets of society, and accustomed them to the blessings of security and order. These people became the subjects of their benefactors, who have governed them with a tender attention; resembling that with which a father directs his children. Respected and beloved almost to adoration, a few Jesuits presided over some hundred thousand Indians. They maintained a perfect equality among all the members of the community. Each of them was obliged to labour, not for himself alone, but for the public. The produce of their fields, together with the fruits of their industry of every species, were deposited in common storehouses, from which each individual received every thing necessary for the supply of his wants. By this institution, almost all the passions which disturb the peace of society, and render the members of it unhappy, were extinguished. A few magistrates, chosen by the Indians themselves, watched over the public tranquillity, and secured obedience to the laws. The sanguinary punishments frequent under other governments were unknown. An admonition from a Jesuit, a slight mark of infamy, or, on some singular occasion, a few lashes with a whip, were sufficient to maintain good order among these innocent and happy people.

But even in this meritorious effort of the Jesuits for the good of mankind, the genius and spirit of their order have mingled and are discernible. They plainly aimed at establishing in Paraguay an independent empire, subject to the society alone, and which, by the superior excellence of its constitution and police, could scarcely have failed to extend its dominion over all the southern continent of America. With this view, in order to prevent the Spaniards or Portuguese in the adjacent settlements from acquiring any dangerous influence over the people within the limits of the province subject to the society, the Jesuits endeavoured to inspire the Indians with hatred and contempt of these nations. They cut off all intercourse between their subjects and the Spanish or Portuguese settlements. They prohibited any private trader of either nation from entering their territories. When they were obliged to admit any person in a public cha-

rafter from the neighbouring governments, they did not permit him to have any conversation with their subjects; and no Indian was allowed even to enter the house where these strangers resided unless in the presence of a Jesuit. In order to render any communication between them as difficult as possible, they industriously avoided giving the Indians any knowledge of the Spanish or of any other European language; but encouraged the different tribes which they had civilized to acquire a certain dialect of the Indian tongue, and laboured to make that the universal language throughout their dominions. As all these precautions, without military force, would have been insufficient to have rendered their empire secure and permanent, they instructed their subjects in the European arts of war. They formed them into bodies of cavalry and infantry, completely armed and regularly disciplined. They provided a great train of artillery, as well as magazines stored with all the implements of war. Thus they established an army so numerous and well-appointed, as to be formidable in a country where a few sickly and ill-disciplined battalions composed all the military force kept on foot by the Spaniards or Portuguese.

Such were the laws, the policy, and the genius of this formidable order; of which, however, a perfect knowledge has only been attainable of late. Europe had observed, for two centuries, the ambition and power of the order. But while it felt many fatal effects of these, it could not fully discern the causes to which they were to be imputed. It was unacquainted with many of the singular regulations in the political constitution or government of the Jesuits, which formed the enterprising spirit of intrigue that distinguished its members, and elevated the body itself to such a height of power. It was a fundamental maxim with the Jesuits, from their first institution, not to publish the rules of their order. These they kept concealed as an impenetrable mystery. They never communicated them to strangers, nor even to the greater part of their own members. They refused to produce them when required by courts of justice; and, by a strange solecism in policy, the civil power in different countries authorized or connived at the establishment of an order of men, whose constitution and laws were concealed with a solicitude which alone was a good reason for having excluded them. During the prosecutions lately carried on against them in Portugal and France, the Jesuits have been so inconsiderate as to produce the mysterious volumes of their institute. By the aid of these authentic records, the principles of their government may be delineated, and the sources of their power investigated with a degree of certainty and precision which, previous to that event, it was impossible to attain.

The pernicious effects, however, of the spirit and constitution of this order, rendered it early obnoxious to some of the principal powers in Europe, and gradually brought on its downfall. The emperor Charles V. saw it expedient to check its progress in his dominions; it was expelled England, by proclamation; 2 James I. in 1604; Venice, in 1606; Portugal, in 1759; France, in 1764; Spain and Sicily, in 1767; and totally suppressed and abolished by the late Pope Clement XIV. in 1773.

Jesuits.

Downfall
of the order
in Europe.

Jesuits
Bark.**JESUITS BARK.** See the article *CINCHONA*.

The account there given being, however, somewhat defective and indistinct in regard both to the enumeration of the species and the botanical distinctions, it has been thought proper to supply those defects in this place by the following more particular descriptions and additional notices concerning an article of so great importance in the materia medica.

1. *CINCHONA OFFICINALIS* (Quinquina *Condam. Alta Gallic.* 1738), *PERUVIAN-BARK Tree*. The characters are as follows.

Plate
CCLII.

"*Cal.* Perianthium monophyllum, superum, quinquefidum, minimum, persistens. *Cor.* monopetala, infundibuliformis; tubus cylindricus, longus; limbus patulus, quinquefidus, acutus. *Stam.* Filamenta quinque, minima; antheræ oblongæ, intra faucem corollæ. *Pist.* Germen subrotundum, inferum; stylus longitudine corollæ. stigma crassiusculum, oblongum, simplex. *Per.* Capsula subrotunda; calyce coronata, bilocularis, a basi versus apicem bifariam dehiscens. *Sem.* plurima, oblonga, compressa, marginata. *Obser.* Flos interdum demit quintam partem numeri in singulis partibus."

In Vol. XL. of the *Phil. Transf.* p. 81. N° 446. there is an account of the Jesuits-bark tree of Peru by Mr William Arrot.—M. de la Condamine afterwards gave a more particular and scientific account of this tree: since which specimens of the fructification have been sent to Europe; and Dr Pulteney has given an excellent figure in his inaugural dissertation *De Cortice Peruviano* in 1764, from which our figure is copied.

The properties and preparations of the Peruvian bark have been already sufficiently detailed under the article *CINCHONA*. We shall here add the following notice of a new preparation of this bark recommended by M. Lunel. He directs to "boil six grains of salt of tartar with an ounce of bark in a pint of water; and, after filtering the decoction, another pint of water is to be boiled with the same quantity of salt and the remaining bark. In this way no bitterness remains; at the same time that the strength of the bark appears to be completely exhausted, as alcohol only extracted two grains of resin from it."

2. *CINCHONA CARIBÆA* *sen JAMAICENSIS*. Of this bark Dr Wright has given an accurate description with an elegant engraving in the *Phil. Transf.* vol. lxvii. p. 504, from which we shall extract the botanic characters so as to distinguish it from other species.

Plate
CCLMI.

"*Fol.* ovata, integerrima, acuta, enervia, opposita. *Flor.* singulares, axillares. *Cal.* Perianthium monophyllum, quinquefidum, minimum, persistens, campanulatum, obsolētissimum, qui quedenatum. *Cor.* monopetala, infundibuliformis; tubus cylindraceus, longissimus; limbus quinquepartitus, tubo æqualis; laciniis ovatis, oblongis, reflexis, quandoque pendulis. *Stam.* Filamenta quinque, filiformia, erecta e medio tubi, longitudine corollæ; antheræ longissimæ, obtusæ, erectæ supra basin exteriorem, affixæ in fauce corollæ. *Capf.* bipartibilis, in duas partes dissepimento parallelo, latere inferiore dehiscens. *Sem.* plurima, compressa, marginata, oblonga."

Dr Wright at first found this tree of a small size; since which he discovered it 50 feet high, and of a proportional height.

The bark from the larger trunk is very fibrous and

woody; that from the limbs and roots, when dry, breaks short off, and powders easier than the Peruvian bark. The Jesuits bark of Jamaica is one of the most agreeable bitters; and infused in wine or spirits with a little lemon-peel, makes a rich and elegant tincture.

In the north side of Jamaica, where this bark is produced in the greatest perfection, it is held in high esteem, and answers every purpose of the Jesuits bark. It sits easy on the stomach, and never occasions vomiting nor nausea, but checks them in remitting fevers, or where the stomach is weak or disordered.

3. *CINCHONA TRIFLORA*: "*Fol.* oppositis, ovatis, acutis, integerrimis, petiolatis; *Floribus* tribus, axillaribus."

The leaves are like the *Cinchona Caribæa*, but larger. The flowers three in number from the axillæ of the leaves, and of a fine red colour. The lacinie are reflected. The seed-vessels are larger than any of the other species we have yet seen.

Mr Roberts discovered this bark tree about the year 1781, but found it no where else than in that district of Jamaica called *Manchioneed*. It grows by the side of a small rapid river near the Bath, and is about 35 feet high, but not thick in proportion.

Towards the bottom of the trunk the bark is rough and furrowed; but higher up it is smooth, and has much the appearance of the Peruvian bark. It is thinner, more fibrous, and redder, than either the Peruvian or the Jamaica bark already mentioned. When powdered, it is of a cinnamon colour, inclining more to red. The taste is musty, bitter, and astringent. It yields its qualities either infused in wine or spirits, but with some difficulty to cold infusion by water.

Trials have been made with this bark in the cure of fevers, and in several with success. But few people could bear more than 20 grains, and even that quantity sometimes occasioned so distressing a sickness and nausea that its exhibition has been in general left off.

4. *CINCHONA FLORIBUNDA*, (*Phil. Transf.* vol. lxxiv. tab. 19. page 452.), *St. Lucia-BARK Tree*. "*Cinchona floribus* paniculatis, glabris; laciniis linearibus, tubo longioribus; staminibus exsertis; *foliis* ellipticis, glabris."

The specimen of this bark we have examined was externally smooth; it was thin, and very fibrous. Its taste was a most nauseous bitter, that lasted long in the mouth; its astringent quality was more than the Peruvian bark.

This bark is violently emetic when fresh; but on long keeping, it loses this quality in part only, as no more than 20 grains can be ventured on, and its repetition at several hours distance.

Intermitting and remitting fevers have been cured by this bark, after resisting the use of the Peruvian bark. But it is probable that in those cases the cure was effected more from its emetic powers than by its tonic virtues. At present, however, it has gone into disuse, except perhaps in the islands where it grows, or where the Peruvian bark has either failed, or cannot easily be got to hand.

5. *CINCHONA BRACHYCARPA*: "*Fol.* ellipticis, rigidis, obtusis, glabris; *Floribus* paniculatis, glabris; *Capf.* ovatis, costatis."

Mr John Lindsay surgeon, Westmoreland, Jamaica, an expert and diligent botanist, discovered this species about

Jesuits
Bark.

Jesuits Bark (Cinchona officinalis.)

Plate CCLII.



Julus.

Jolloxochittl.

• H. Bell. Pen. M. P. Sculptor fecit.

Jesuits Bark.

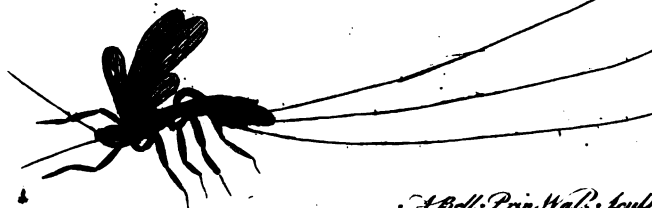
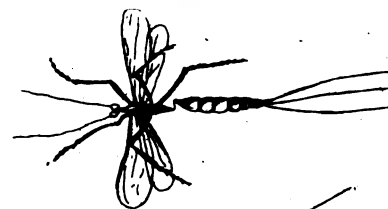
Plate CCLIII.

Cinchona

Caribaea?



Tchumours.



A. Bell. Prin. Wall. Sculptor. fecit.

Jesuits
Bark.Jesuits
Bark,
J. fus.

about the year 1785. It grew on the side of a steep hill or eminence running from east to west, and the tree was only about eight or ten feet high.

The leaves in a recent state were oval, shining, and rigid; the sprig dries with great difficulty, and turns to a rusty brown. The spike has many white flowers, similar in figure to those of the St Lucia bark tree. The seed-vessels are larger than those of the Peruvian. The seeds are small and scaly. The trunks of this small tree are much furrowed; the cuticle very thick; the bark farther up, smooth and brown; that of the inside is of the colour of the Peruvian bark, but more fibrous. It has no aroma; and is less bitter, but more astringent, than the cinchona officinalis.

Mr Lindsay has made trial of this bark in the cure of intermitting and remitting fevers with success. He finds that the stomach will bear 25 or 30 grains very well. He has used it also in tincture and decoction, in various cases of dyspepsia, with advantage. On the whole, were this bark to be had in sufficient quantity, it promises to be an useful succedaneum to the Peruvian bark.

6. *CINCHONA ANGUSTIFOLIA*: "*Floribus panniculatis glabris; Capsulis oblongis pentagonis; Folii linearibus lanceolatis.*" (Vide *AB. Stockholm*, vol. viii. 1787, p. 117. Tab. 3.)

7. *CINCHONA MONTANA*. This species, which is a native of Guadaloupe and Martinico, was first described by M. Mallet, in the *Journal de Physique* for March 1781, under the name of *Quinquina Pison*; and is said to have been employed by the author with the happiest effects, in intermitting fevers, even after the Peruvian bark had failed.—It has since been scientifically described, and a figure of it given, by M. Badier in the *Journal de Physique*, Feb. 1789, under the name of "*Cinchona Montana, foliis ovatis utrinque glabris, stipulis basi connato-vaginantibus, corymbo terminali, corollis glabris.*" It is described as a very beautiful tree, growing more than 40 feet high, and having a large regular head of branches with a thick foliage. The bark, when the epidermis is removed, is of a grey-brown colour, and its taste very bitter. It would seem to contain no resin, all its extract being soluble in water. It is however represented as a very quick and powerful febrifuge, as we have already noticed; at the same time that it possesses an emetic and cathartic property. To these possibly its effect on fever may be in part owing; though whether its evacuating qualities will admit of its ever becoming a good substitute for the officinalis, or whether it possesses any tonic power, remains yet to be determined.

8. *CINCHONA SPINOSA*; thus described in the *Journal de Physique* for October 1790: "*Foliis minimis subrotundis, pedunculis unifloris, corollis glabris quadrifidis tetrandris, seminibus submarginatis.*" It is a native of St Domingo. The flowers are like those of the Caribæa, but smaller by a half. It is but a shrubby plant, not exceeding eight or ten feet in height. The leaves are small and very glabrous, and the branches terminated by a spine. The peculiar properties of this bark, or its comparative efficacy as a medicine, have not yet been ascertained.

9, 10. In the *Manuel des Vegetaux* by M. de St Germain, we find two species mentioned under the names

of *Cinchona Antillana* and *Cinchona Herbacea*; but as no descriptions are added, we can say nothing concerning them.

11. A bark under the name of *ANGUSTURA BARK* has lately been introduced into practice as a substitute for the Peruvian bark. See *London Medical Journal*, vol. x. page 154.

This bark is of much the same colour and thickness as the canella aromatica, and powders very freely. It has a good deal of the aromatic taste joined to bitterness and astringency; and has been supposed a true species of cinchona, different from the blanca or white sort mentioned by Mr William Arrat in *Phil. Transf.* vol. xl. n° 446. Mr Bruce, however, is said to have pronounced it to be the bark of the *Brucea antidysenterica*; to which indeed the resemblance is very considerable in its effects.

The Angustura bark was supposed at first to be the production of a tree growing on the coast of Africa; but is now found to come from the Spanish Main. According to *Experiments and Observations on the Angustura bark*, by Augustus Everard Brande, just published, it is said to excel the Peruvian bark in some of its properties, and in other diseases to have different qualities. It is a powerful bitter, joined with an aroma not more pungent than the cascarilla, having a portion of pure oil which approaches in its nature to camphor. It differs from the Peruvian bark, by possessing a narcotic principle; and seems more powerful than it both as a tonic and an antiseptic. Various experiments on the antiseptic power of different substances are related, in which the columbo seems the least efficacious, and the Angustura bark to claim the highest rank. The following is given as the best mode of preparing the extract.

"The quantity of extract obtained by the following method is somewhat less than by boiling, but it appears altogether the best. Four ounces of powdered Angustura bark were put into a flannel bag of a conical shape: a sufficiency of boiling water was then poured upon it, and this repeated till the filtering liquor had but little taste or colour. On evaporation by a gentle heat, there remained 13 drams and one scruple of an extract, possessing the full flavour of the bark, and which contained two drams of resinous matter."

Half a pound of bruised Angustura bark was put into a still with a gallon of water, and two quarts drawn off. This distilled water has a very singular flavour, perhaps something like strong parsley water. A white essential oil swam on the surface, but in too small a quantity for separation or ascertaining its weight. This possesses the full smell of the bark, and is acrid to the taste, leaving a glow in the mouth like camphire. From six pounds of this bark, it is said, only two scruples of essential oil have been obtained by distillation.—The tincture seems also an useful preparation, but the resin in its pure state appears acrid and stimulating.

In Mr Brande's practice this bark seems to have excelled the Peruvian in curing intermittents: Dr Pearson, however, found that it was scarcely superior in any instance, and sometimes not equal; but in low fevers, and putrid fevers, it seemed superior. In the headach, attended with fever, but arising from the stomach, Mr Brande found it useful; and in dysentery and dyspepsia it has been of great service.

JESUS the Son of SIRACH, a native of Jerusalem, com.

composed, about 200 B. C. the book of Ecclesiasticus, called by the Greeks *Παρακλῆσις*, "replenished with virtue;" who also quote it under the title of *the Wisdom of Solomon the son of Sirach*. His grandson, who was also of the same name, and a native of Jerusalem, translated it from the Hebrew into Greek about 121 B. C. We have this Greek version, but the Hebrew text is lost.

JESUS CHRIST, the Son of God, and Saviour of mankind, descended from heaven, and took upon him the human nature in Judæa, towards the conclusion of the reign of Herod the Great, king of that country. The place of his birth was Bethlehem, a flourishing city of Judah; but the year in which he was born is not precisely ascertained. The most general opinion is, that it happened about the year of Rome 748 or 749, and about 18 months before the death of Herod. Four inspired writers have transmitted to us an account of the life of Jesus Christ. They mention particularly his birth, lineage, family, and parents; but say very little concerning his infancy and earlier youth. Herod being informed that the Messiah, or king of the Jews, so much spoken of by the prophets, was now born, being afraid that his kingdom should now be taken away, contrived how to destroy his supposed rival: but Christ, being carried, while very young, into Egypt, escaped the cruelty of the tyrant; who, being determined to make sure work, made a general massacre of the infants about Bethlehem, from the age of two years and under.

After the death of Herod, our Saviour was brought back to Judæa; but we are totally ignorant of what his employment was during the interval between his return thither and the time of his entering upon the ministry. We know only, that when he was but 12 years of age, he disputed in the temple with the most learned of the Jewish doctors; whom he surprised with his knowledge, and the answers he gave to their questions. After this, as the scripture tells us, he continued with his parents, and was subject to them, till he entered upon his ministry. It is said, indeed, though upon no sure foundation, that during this period he followed the trade of his father, who was a carpenter. In the 30th year of his age, he began his public ministry; to which the attention of the people was drawn by the preaching of John, a prophet miraculously inspired of God to proclaim the existence of the Saviour, as now descended upon earth, and visible to the eyes of all; and by this prophet Christ himself was baptized in the waters of Jordan, that he might not, in any point, neglect to answer the demands of the Jewish law.

It is not necessary here to enter into a particular detail of the life and actions of Jesus Christ. Every one knows, that his life was one continued scene of the most perfect sanctity, and the purest and most active virtue; not only without spot, but also beyond the reach of suspicion. And it is also well known, that by miracles of the most stupendous kind, and not more stupendous than salutary and beneficent, he displayed to the universe the truth of that religion which he brought with him from above, and demonstrated the reality of his divine commission in the most illustrious manner. For the propagation of his religion through the country of Judæa, our Saviour chose 12

apostles; whom, however, he sent out only once, and after their return kept them constantly about his person. But, besides these, he chose other 70, whom he dispersed throughout the country.

There have been many conjectures concerning the reason why the number of apostles was fixed at 12, and that of the other teachers at 70. The first, however, was, according to our Saviour's own words (Matt. xix. 28.), an allusion to the 12 tribes of Israel, thereby intimating that he was the king of these 12 tribes; and as the number of his other messengers answers evidently to that of the senators who composed the Sanhedrim, there is a high degree of probability in the conjecture of those who think that Christ by this number designed to admonish the Jews, that the authority of their Sanhedrim was now at an end, and that all power with respect to religious matters was vested in him alone. His ministry, however, was confined to the Jews; nor, while he remained upon earth, did he permit his apostles or disciples to extend their labours beyond this favoured nation. At the same time, if we consider the illustrious acts of mercy and benevolence that were performed by Christ, it will be natural to conclude, that his fame must soon have spread abroad in other countries. Indeed this seems probable from a passage in scripture, where we are told that some Greeks applied to the apostle Philip in order to see Jesus. We learn also from authors of no small note, that Abgarus † king of Edesa, being seized † See *Abgarus* with a severe and dangerous illness, wrote to our Lord, imploring his assistance; and that Jesus not only sent him a gracious answer, but also accompanied it with his picture, as a mark of his esteem for that pious prince. These letters are still extant; but by the judicious part of mankind are universally looked upon as spurious; and indeed the late Mr Jones, in his treatise entitled *A new and full method of settling the canonical authority of the New Testament*, hath offered reasons which seem almost unanswerable against the authenticity of the whole transaction.

The preaching of our Saviour, and the numberless miracles he performed, made such an impression on the body of the Jewish nation, that the chief priests and leading men, jealous of his authority, and provoked at his reproaching them with their wicked lives, formed a conspiracy against him. For a considerable time their designs proved abortive; but at last Jesus, knowing that he had fulfilled every purpose for which he came into the world, suffered himself to be taken through the treachery of one of his disciples, named *Judas Iscariot*, and was brought before the Sanhedrim. In this assembly he was accused of blasphemy; and being afterwards brought before Pilate the Roman governor, where he was accused of sedition, Pilate was no sooner sat down to judge in this cause, than he received a message from his wife, desiring him to have nothing to do with the affair, having that very day had a frightful dream on account of our Saviour, whom she called *that just man*. The governor, intimidated by this message, and still more by the majesty of our Saviour himself, and the evident falsehood of the accusations brought against him, was determined if possible to save him. But the clamours of an enraged populace, who at last threatened to accuse Pilate himself as a traitor to the Roman emperor, got the

Jet
||
Jewels

the better of his love of justice, which indeed on other occasions was not very fervent.

Our Saviour was now condemned by his judge, though contrary to the plainest dictates of reason and justice; was executed on a cross between two thieves, and very soon expired. Having continued three days in a state of death, he rose from the dead, and made himself visible to his disciples as formerly. He conversed with them 40 days after his resurrection, and employed himself during that time in instructing them more fully concerning the nature of his kingdom; and having manifested the certainty of his resurrection to as many witnesses as he thought proper, he was, in the presence of many of his disciples, taken up into heaven, there to remain till the end of the world. See CHRISTIANITY.

JET, a black inflammable substance of the bituminous kind, harder than asphaltum, and susceptible of a good polish. It becomes electrical by rubbing, attracting light bodies like yellow amber. It swims on water, so that its specific gravity must be less than 1000; notwithstanding which it has been frequently confounded with the *lapis obsidianus*, the specific gravity of which, according to Kirwan, is no less than 1744. It also resembles cannel-coal extremely in its hardness, receiving a polish, not foiling the fingers, &c. so that it has also been confounded with this. The distinction, however, is easily made betwixt the two; for cannel-coal wants the electrical properties of jet, and is likewise so heavy as to sink in water; its specific gravity being no less than 1273; whereas that of jet, as has already been said, is less than 1000.

M. Magellan is of opinion that jet is a true amber, differing from the yellow kind only in the mere circumstance of colour, and being lighter on account of the greater quantity of bituminous matter which enters into its composition. When burning it emits a bituminous smell. It is never found in strata or continued masses like fossil stones; but always in separate and unconnected heaps like the true amber. Great quantities of it have been dug up in the Pyrenean mountains; also near *Batalka*, a small town of Portugal; and in Galicia in Spain. It is found also in Ireland, Sweden, Prussia, Germany, and Italy. It is used in making small boxes, buttons, bracelets, mourning jewels, &c. Sometimes also it is employed in conjunction with proper oils in making varnishes. When mixed with lime in powder, it is said to make an extraordinary hard and durable cement.

Fer-d'Eau, a French term, frequently also used with us, for a fountain that casts up water to a considerable height in the air. See HYDROSTATICS, n° 27.; and ICELAND, n° 3. 4.

JETTY-HEAD, a name usually given in the royal dock-yards to that part of a wharf which projects beyond the rest; but more particularly the front of a wharf, whose side forms one of the cheeks of a dry or wet dock.

JEWEL, any precious stone, or ornament beset with them. See DIAMOND, RUBY, &c.

JEWELS made a part of the ornaments with which the Jews, Greeks and Romans, especially their ladies of distinction, adorned themselves. So prodigious was the extravagance of the Roman ladies, in particular, that Pliny the elder says he saw Lollia Paulina with an equipage of this kind amounting, according to Dr

Jewel.

Arbuthnot's calculation, to 322,916l. 13s. 4d. of our money. It is worthy of observation, that precious stones amongst the Romans and all the ancients were much scarcer, and consequently in higher esteem, than they are amongst us, since a commerce has been opened with the Indies.—The ancients did not know how to cut and polish them to much perfection; but coloured stones were not scarce, and they cut them very well either hollow or in relief.—When luxury had gained ground amongst them, the Romans hung pendants and pearls in their ears; and for this purpose the ears of both sexes were frequently bored. See EARS.

JEWEL (John), a learned English writer and bishop, was born in 1522, and educated at Oxford. In 1540 he proceeded A. B. became a noted tutor, and was soon after chosen rhetoric lecturer in his college. In February 1544, he commenced A. M. He had early imbibed Protestant principles, and inculcated the same to his pupils; but this was carried on privately till the accession of King Edward VI. in 1546, when he made a public declaration of his faith, and entered into a close friendship with Peter Martyr, who was made professor of divinity at Oxford. In 1550, he took the degree of B. D. and frequently preached before the university with great applause. At the same time he preached and catechised every other Sunday at Sunningwell in Berkshire, of which church he was rector. Upon the accession of Queen Mary to the crown in 1553, he was one of the first who felt the rage of the storm then raised against the reformation; for before any law was made, or order given by the queen, he was expelled Corpus Christi college by the fellows, by their own private authority; but he continued in Oxford till he was called upon to subscribe to some of the Popish doctrines, under the severest penalties, which he submitted to. However, this did not procure his safety; for he was obliged to fly, and, after encountering many difficulties, arrived at Franckfort, in the 2d year of Queen Mary's reign, where he made a public recantation of his subscription to the Popish doctrines. Thence he went to Strasburg, and afterwards to Zurich, where he attended Peter Martyr, in whose house he resided. He returned to England in 1558, after Queen Mary's death; and in 1559, was consecrated bishop of Salisbury. This promotion was given him as a reward for his great merit and learning; and another attestation of these was given him by the university of Oxford, who, in 1565, conferred on him in his absence the degree of D. D. In this character he attended the queen to Oxford the following year, and presided at the divinity-disputations held before her majesty on that occasion. He had before greatly distinguished himself by a sermon preached at St Paul's cross, presently after he was made a bishop, wherein he gave a public challenge to all the Roman catholics in the world, to produce but one clear and evident testimony out of any father or famous writer, who flourished within 600 years after Christ, for any one of the articles which the Romanists maintain against the church of England; and, two years afterwards, he published his famous apology for this church. In the mean time, he gave a particular attention to his diocese; where he began in his first visitation, and perfected in his last, such a reformation, not only in his cathedral and parochial churches,

Jewel.

churches, but in all the churches of his jurisdiction, as procured him and the whole order of bishops due reverence and esteem. For he was a careful overlooker and strict observer, not only of all the flocks, but also of the pastors, in his diocese: and he watched so narrowly upon the proceedings of his chancellor and archdeacons, and of his stewards and receivers, that they had no opportunities of being guilty of oppression, injustice, or extortion, nor of being a burden to the people, or a scandal to himself. To prevent these and the like abuses, for which the ecclesiastical courts are often too justly censured, he sat often in his consistory-court, and saw that all things were carried rightly there: he also sat often as assitant on the bench of civil justice, being himself a justice of the peace. Amidst these employments, however, the care of his health was too much neglected; to which, indeed, his general course of life was totally unfavourable. He rose at four o'clock in the morning; and, after prayers with his family at five, and in the cathedral about six, he was so fixed to his studies all the morning, that he could not without great violence be drawn from them. After dinner, his doors and ears were open to all suitors; and it was observed of him, as of Titus, that he never sent any sad from him. Suitors being thus dismissed, he heard, with great impartiality and patience, such causes debated before him, as either devolved to him as a judge, or were referred to him as an arbitrator; and if he could spare any time from these, he reckoned it as clear gain to his study. About nine at night he called all his servants to an account how they had spent the day, and he went to prayers with them. From the chapel he withdrew again to his study till near midnight, and from thence to his bed; in which when he was laid, the gentleman of his bed-chamber read to him till he fell asleep. This watchful and laborious life, without any recreation at all, except what his necessary refreshment at meals and a very few hours of rest afforded him, wasted his life too fast. He died at Monkton-Farley, in 1571, in the 50th year of his age. He wrote, 1. A view of a seditious bull sent into England by Pope Pius V. in 1569. 2. A treatise on the Holy Scriptures. 3. An exposition of St Paul's two epistles to the Thessalonians. 4. A treatise on the sacrament. 5. An apology for the national church. 6. Several sermons, controversial treatises, and other works.

"This excellent prelate (says the Rev. Mr Granger) was one of the greatest champions of the reformed religion, as he was to the church of England what Bellarmine was to that of Rome. His admirable Apology was translated from the Latin by Anne, the second of the four learned daughters of Sir Anthony Coke, and mother of Sir Francis Bacon. It was published, as it came from her pen, in 1564, with the approbation of the queen and the prelates. The same Apology was printed in Greek at Constantinople, under the direction of St Cyril the patriarch. His Defence of his Apology, against Harding and other Popish divines, was in such esteem, that Queen Elizabeth, King James I. King Charles I. and four successive archbishops, ordered it to be kept chained in all parish-churches for public use.

Jewel-Blocks, in the sea-language, a name given to two small blocks which are suspended at the extre-

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city of the main and fore-top-sail yards, by means of an eye-bolt driven from without into the middle of the yard-arm, parallel to its axis. The use of these blocks is, to retain the upper part of the top-mast studding-sails beyond the skirts of the top-sails, so that each of those sails may have its full force of action, which would be diminished by the encroachment of the other over its surface. The *baliards*, by which those studding-sails are hoisted, are accordingly passed through the jewel-blocks; whence, communicating with a block on the top-mast head, they lead downwards to the top or decks, where they may be conveniently hoisted. See *SAIL*.

JEWS, a name derived from the patriarch Judah, and given to the descendants of Abraham by his eldest son Isaac, who for a long time possessed the land of Palestine in Asia, and are now dispersed through all nations in the world.

The history of this people, as it is the most singular, so is it also the most ancient in the world; and the greatest part being before the beginning of profane history, depends entirely on the authenticity of the Old Testament, where it is only to be found.—To repeat here what is said in the sacred writings would both be superfluous and tedious, as those writings are in every persons hands, and may be consulted at pleasure. It seems most proper therefore to commence the history of the Jews from their return to Jerusalem from Babylon, and the rebuilding of their city and temple under Ezra and Nehemiah, when the scripture leaves off any farther accounts, and profane historians begin to take notice of them. We shall, however, premise a chronological list of their judges and kings down to the captivity.

The Israelites had no king of their nation till Saul. Before him, they were governed, at first by elders, as in Egypt; then by princes of God's appointment, as Moses and Joshua; then by judges, such as Othniel, Ehud, Shamgar, Gideon, Jephthah, Samson, Eli, Samuel; and last of all by kings, as Saul, David, Solomon, Rehoboam, &c.

A list of the Judges of Israel in a chronological order. The numbers prefixed denote the years of the world.

2570. THE death of Joshua.

2585. The government of the elders for about 15 years.

2592. An anarchy of about seven years. The history of Micah, the conquest of the city of Laish, by part of the tribe of Dan, and the war undertaken by the 11 tribes against Benjamin, are all referred to this time.

2591. The first servitude under Cushan-rishathaim king of Mesopotamia, began in 2591, and lasted eight years to 2599.

2599. Othniel delivered Israel in the 40th year after peace established in the land by Joshua.

2662. A peace of about 62 years, from the deliverance procured by Othniel, in 2599, to 2662, when the second servitude under Eglon king of the Moabites happened. It lasted 18 years.

2679. Ehud delivers Israel.

After him Shamgar governed, and the land was in peace till the 80th year after the first deliverance procured by Othniel.

2699.

- Jews.** 2699. The third servitude under the Canaanites, which lasted 20 years, from 2699 to 2719.
2719. Deborah and Barak deliver the Israelites: from the deliverance procured by Ehud to the end of Deborah and Barak's government, were 40 years.
2768. Abimelech the natural son of Gideon is acknowledged king by the Shechemites.
2771. He died at the siege of Thebez in Palestine.
2772. Tola after Abimelech governs for 23 years, from 2772 to 2795.
2795. Jair succeeds Tola, and governs 22 years, from 2795 to 2816.
2799. The fifth servitude under the Philistines, which lasted 18 years, from 2799 to 2817.
2817. The death of Jair.
2817. Jephthah is chosen head of the Israelites beyond Jordan, he defeated the Ammonites, who oppressed them. Jephthah governed six years, from 2817 to 2823.
2823. The death of Jephthah.
2830. Ibzan governs seven years, from 2823 to 2830.
2840. Elon succeeds Ibzan. He governs from 2830 to 2840.
- Abdon judges Israel eight years, from 2840 to 2848.
2848. The sixth servitude, under the Philistines, which lasted 40 years, from 2848 to 2888.
2848. Eli the high-priest, of the race of Ithamar, governed 40 years, the whole time of the servitude under the Philistines.
2849. The birth of Samson.
2887. The death of Samson, who was judge of Israel during the judicature of Eli the high-priest.
2888. The death of Eli, and beginning of Samuel's government, who succeeded him.
2909. The election and anointing of Saul, first king of the Hebrews.

A chronological list of the kings of the Hebrews.

SAUL, the first king of the Israelites, reigned 40 years, from the year of the world 2909 to 2949.

Ishbosheth the son of Saul succeeded him, and reigned six or seven years over part of Israel, from 2949 to 2956.

David was anointed king by Samuel in the year of the world 2934, but did not enjoy the regal power till the death of Saul in 2949, and was not acknowledged king of all Israel till after the death of Ishbosheth in 2956. He died in 2990 at the age of 70.

Solomon his son succeeded him; he received the royal unction in the year 2989. He reigned alone after the death of David in 2990. He died in 3029, after a reign of 40 years.

After his death, the kingdom was divided; and the ten tribes having chosen Jeroboam for their king, Rehoboam, the son of Solomon, reigned only over the tribes of Judah and Benjamin.

The Kings of Judah.

Rehoboam, the son and successor of Solomon, reigned 17 years; from the year 3029 to 3046.

Abijam, three years, from 3046 to 3049.

Asa, 41 years, from 3049 to 3090.

Jehoshaphat, 25 years, from 3090 to 3115.

Jehoram, four years, from 3115 to 3119.

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Ahaziah, one year, from 3119 to 3120.

Athaliah, his mother, reigned six years, from 3120 to 3126.

Joash was set upon the throne by Jehoiada the high-priest, in 3126. He reigned 40 years, to the year 3165.

Amasiah, 29 years, from 3165 to 3194.

Uzziah, otherwise called *Azariah*, reigned 27 years, to the year 3221. Then attempting to offer incense in the temple, he was struck with a leprosy, and obliged to quit the government. He lived after this 26 years, and died in 3246.

Jotham his son took upon him the government in the year of the world 3221. He reigned alone in 3246, and died in 3262.

Ahaz succeeded Jotham in the year of the world 3262. He reigned 16 years, to 3278.

Hezekiah, 28 years, from 3278 to 3306.

Manasseh, 55 years, from the year of the world, 3306 to 3361.

Amon, 2 years, from 3361 to 3363.

Josiah, 31 years, from 3363 to 3394.

Jehoahaz, three months.

Eliakim, or Jehoiakim, 11 years, from the year 3394 to 3405.

Jehoiachin, or Jechoniah, reigned three months and ten days, in the year 3405.

Mattaniah, or Zedekiah, reigned 11 years, from 3405 to 3416. In the last year of his reign Jerusalem was taken, the temple burnt, and Judah carried into captivity, beyond the Euphrates.

Kings of Israel.

Jeroboam reigned 22 years, from 3029 to 3051.

Nadab, one year. He died in 3051.

Baasha, 22 years, from 3052 to 3074.

Elah, two years. He died in 3075.

Zimri, seven days.

Omri, 11 years, from 3075 to 3086. He had a competitor Tibni who succeeded, and died in what year we know not.

Ahab, 21 years, from 3086 to 3107.

Ahaziah, two years, from 3106 to 3108.

Jehoram, the son of Ahab, succeeded him in 3108. He reigned 12 years, and died in 3120.

Jehu usurped the kingdom in 3120, reigned 28 years, and died in 3148.

Jehoahaz reigned 17 years, from 3148 to 3165.

Joash reigned 14 years, from 3165 to 3179.

Jeroboam II. reigned 41 years, from 3179 to 3220.

Zachariah, 12 years, from 3220 to 3232.

Shallum, reigned a month. He was killed in 3233.

Menahem, 10 years, from 3233 to 3243.

Pekahiah, two years, from 3243 to 3245.

Pekah, 20 years, from 3245 to 3265.

Hoshea, 18 years, from 3265 to 3283. Here the kingdom of Israel had an end after a duration of 253 years.

Cyrus the Great, king of Persia, having conquered Cyrus pub-
Babylon and almost all the western parts of Asia, per-lishes a de-
ceiving the desolate and ruinous condition in which crece for re-
the province of Palestine lay, formed a design of re-building
floring the Jews to their native country, and permit-Jerusalem.
ting them to rebuild Jerusalem and re-establish their
worship. For this purpose he issued out a decree in the
first year of his reign, about 536 B. C. by which they
were

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¹ Jews. were allowed not only to return and rebuild their city, but to carry along with them all the sacred vessels which Nebuchadnezzar had carried off, and engaged to defray the expence of building the temple himself. This offer was gladly embraced by the more zealous Jews of the tribes of Judah, Benjamin, and Levi; but many more, being no doubt less sanguine about their religion chose to stay where they were.

In 534 B. C. the foundations of the temple were laid, and matters seemed to go on prosperously, when the undertaking was suddenly obstructed by the Samaritans. These came at first expressing an earnest desire to assist in the work, as they worshipped the same God with the Jews; but the latter refused their assistance, as they knew they were not true Israelites, but the descendants of those heathens who had been transplanted into the country of the ten tribes after their captivity by Shalmanezar. This refusal proved the source of all that bitter enmity which afterwards took place between the Jews and Samaritans; and the immediate consequence was, that the latter made all the opposition in their power to the going on of the work. At last, however, all obstacles were surmounted, and the temple finished as related in the books of Ezra and Nehemiah. The last of these chiefs died about 409 B. C. after having restored the Jewish worship to its original purity, and reformed a number of abuses which took place immediately on its commencement.

² The temple &c. finished

³ Administration of affairs conferred on the high-priests.

But though the Jews were now restored to the free exercise of religion, they were neither a free nor a powerful people as they had formerly been. They were few in number, and their country only a province of Syria, subject to the kings of Persia. The Syrian governors conferred the administration of affairs upon the high-priests; and their accepting this office, and thus deviating from the law of Moses, must be considered as one of the chief causes of the misfortunes which immediately befel the people, because it made room for a set of men who aspired at this high office merely through ambition or avarice, without either zeal for religion or love for their country. It besides made the high-priesthood capable of being disposed of at the pleasure of the governors, whereas the Mosaic institution had fixed it unalienably in the family of Aaron.—Of the bad effects of this practice a fatal instance happened in 373 B. C. Bagoses, governor of Syria, having contracted an intimate friendship with Jeshua the brother of Johanan the high-priest, promised to raise him to the pontifical office a few years after his brother had been invested with it. Jeshua came immediately to Jerusalem, and acquainted his brother with it. Their interview happened in the inner court of the temple; and a scuffle ensuing, Jeshua was killed by his brother, and the temple thus polluted in the most scandalous manner. The consequence to the Jews was, that a heavy fine was laid on the temple, which was not taken off till seven years after.

The first public calamity which befel the Jewish nation after their restoration from Babylon, happened in the year 351 B. C.; for having some how or other disoblinded Darius Ochus king of Persia, he besieged and took Jericho, and carried off all the inhabitants captives. From this time they continued faithful to

the Persians, inasmuch that they had almost drawn upon themselves the displeasure of Alexander the Great. That monarch having resolved upon the siege of Tyre, and being informed that the city was wholly supplied with provisions from Judea, Samaria, and Galilee, sent to Jaddua, then high-priest, to demand of him that supply which he had been accustomed to pay to the Persians. The Jewish pontiff excused himself on account of his oath of fidelity to Darius; which so provoked Alexander, that he had no sooner completed the reduction of Tyre than he marched against Jerusalem. The inhabitants then, being with good reason thrown into the utmost consternation, had recourse to prayers; and Jaddua is said, by a divine revelation, to have been commanded to go and meet Alexander. He obeyed accordingly, and set out on his journey, dressed in his pontifical robes, at the head of all his priests in their proper habits, and attended by the rest of the people dressed in white garments. Alexander is said to have been seized with such awful respect on seeing this venerable procession, that he embraced the high-priest, and paid a kind of religious adoration to the name of God engraven on the front of his mitre. His followers being surprised at this unexpected behaviour, the Macedonian monarch informed them, that he paid that respect not to the priest, but to his God, as an acknowledgment for a vision which he had been favoured with at Dia; where he had been promised the conquest of Persia, and encouraged in his expedition by a person of much the same aspect and dressed in the same habit with the pontiff before him. He afterwards accompanied Jaddua into Jerusalem, where he offered sacrifices in the temple. The high-priest showed him also the prophecies of Daniel, wherein the destruction of the Persian empire by himself is plainly set forth; in consequence of which the king went away highly satisfied, and at his departure asked the high-priest if there was nothing in which he could gratify himself or his people. Jaddua then told him, that, according to the Mosaic law, they neither sowed nor ploughed on the seventh year; therefore would esteem it an high favour if the king would be pleased to remit their tribute in that year. To this request the king readily yielded; and having confirmed them in the enjoyment of all their privileges, particularly that of living under their own laws, he departed.

Whether this story deserves credit or not (for the whole transaction is not without reason called in question by some), it is certain that the Jews were much favoured by Alexander; but with him their good fortune seemed also to expire. The country of Judea being situated between Syria and Egypt, became subject to all the revolutions and wars which the ambitious successors of Alexander waged against each other. At first it was given, together with Syria and Phoenicia, to Leomedon the Mitylenian, one of Alexander's generals; but he being soon after stripped of the other two by Ptolemy, Judea was next summoned to yield to the conqueror. The Jews scrupled to break their oath of fidelity to Leomedon; and were of consequence invaded by Ptolemy at the head of a powerful army. The open country was easily reduced; but the city being strongly fortified both by art and nature, threatened a strong resistance. A superstitious

⁴ Interview of the high-priest with Alexander the Great.

⁵ Miserable state of the Jews after Alexander's death.

Jews.

fear for breaking the sabbath, however, prevented the besieged from making any defence on that day; of which Ptolemy being informed, he caused an assault to be made on the sabbath, and easily carried the place. At first he treated them with great severity, and carried 100,000 men of them into captivity; but reflecting soon after on their known fidelity to their conquerors, he restored them to all the privileges they had enjoyed under the Macedonians. Of the captives he put some into garrisons, and others he settled in the countries of Libya and Cyrene. From those who settled in the latter of these countries descended the Cyrenean Jews mentioned by the writers of the New Testament.

Five years after Ptolemy had subdued Judea, he was forced to yield it to Antigonus, reserving to himself only the cities of Ace, Samaria, Joppa, and Gaza; and carrying off an immense booty, together with a great number of captives, whom he settled at Alexandria, and endowed with considerable privileges and immunities.—Antigonus behaved in such a tyrannical manner, that great numbers of his Jewish subjects fled into Egypt, and others put themselves under the protection of Seleucus, who also granted them considerable privileges. Hence this nation came gradually to be spread over Syria and Asia Minor; while Judea seemed to be in danger of being depopulated till it was recovered by Ptolemy in 292. The affairs of the Jews then took a more prosperous turn, and continued in a thriving way till the reign of Ptolemy Philopator, when they were grievously oppressed by the incursions of the Samaritans, at the same time that Antiochus Theos king of Syria invaded Galilee. Ptolemy, however, marched against Antiochus, and defeated him; after which, having gone to Jerusalem to offer sacrifices, he ventured to profane the temple itself by going into it. He penetrated through the two outer courts; but as he was about to enter the sanctuary, he was struck with such dread and terror that he fell down half-dead. A dreadful persecution was then raised against the Jews, who had attempted to hinder him in his impious attempt; but this persecution was stopped by a still more extraordinary accident related under the article EGYPT, no 30. and the Jews again received into favour.

6
Subdued by
Antiochus
the Great.

About the year 204 B. C. the country of Judea was subdued by Antiochus the Great; and on this occasion the loyalty of the Jews to the Egyptians failed them, the whole nation readily submitting to the king of Syria. This attachment so pleased the Syrian monarch, that he sent a letter to his general, wherein he acquainted him that he designed to restore Jerusalem to its ancient splendor, and to recal all the Jews that had been driven out of it: that out of his singular respect to the temple of God, he granted them 20,000 pieces of silver, towards the charges of the victims, frankincense, wine, and oil; 1400 measures of fine wheat, and 375 measures of salt, towards their usual oblations: that the temple should be thoroughly repaired at his cost; that they should enjoy the free exercise of their religion; and restore the public service of the temple, and the priests, Levites, singers, &c. to their usual functions: that no stranger, or Jew that was unpurified, should enter farther into the temple than was allowed by their law; and that no flesh of unclean

Jews.

beasts should be brought into Jerusalem; not even their skins: and all these under the penalty of paying 3000 pieces of silver into the treasury of the temple. He further granted an exemption of taxes for three years to all the dispersed Jews that should come within a limited time to settle in the metropolis; and that all who had been sold for slaves within his dominions should be immediately set free.

This sudden prosperity proved of no long duration. Dreadful About the year 176, a quarrel happened between commo- Onias at that time high priest, and one Simon, gover- tions. nor of the temple, which was attended with the most fatal consequences. The causes of this quarrel are unknown. The event, however, was, that Simon finding he could not get the better of Onias, informed Apollonius governor of Cœlosyria and Palestine, that there was at that time in the temple an immense treasure, which at his pleasure might be seized upon for the use of the king of Syria. Of this the governor instantly sent intelligence to the king, who dispatched one Heliodorus to take possession of the supposed treasure. This person, through a miraculous interposition, as the Jews pretend, failed in his attempt of entering the temple; upon which Simon accused the high-priest to the people, as the person who had invited Heliodorus to Jerusalem. This produced a kind of civil war, in which many fell on both sides. At last Onias having complained to the king, Simon was banished; but soon after, Antiochus Epiphanes having ascended the throne of Syria, Jason, the high-priest's brother, taking advantage of the necessities of Antiochus, purchased from him the high-priesthood at the price of 350 talents, and obtained an order that his brother should be sent to Antioch, there to be confined for life.

Jason's next step was to purchase liberty, at the price of 150 talents more, to build a gymnasium at Jerusalem similar to those which were used in the Grecian cities; and to make as many Jews as he pleased free citizens of Antioch. By means of these powers he became very soon able to form a strong party in Judea; for his countrymen were exceedingly fond of the Grecian customs, and the freedom of the city of Antioch was a very valuable privilege. From this time therefore a general apostacy took place; the service of the temple was neglected, and Jason abandoned himself, without remorse to all the impieties and absurdities of paganism. A general apostacy takes place

He did not, however, long enjoy his ill-acquired dignity. Having sent his brother Menelaus with the usual tribute to Antiochus, the former took the opportunity of supplanting Jason in the same manner that he had supplanted Onias. Having offered for the high-priesthood 300 talents more than his brother had given, he easily obtained it, and returned with his new commission to Jerusalem. He soon got himself a strong party; but Jason proving too powerful, forced Menelaus and his adherents to retire to Antioch. Here, the better to gain their point, they acquainted Antiochus that they were determined to renounce their old religion, and wholly conform themselves to that of the Greeks: which so pleased the tyrant, that he immediately gave them a force sufficient to drive Jason out of Jerusalem; who thereupon took refuge among the Ammonites.

Menelaus being thus freed from his rival, took care

Jews.

to fulfil his promise to the king with regard to the apostacy, but forgot to pay the money he had promised. At last he was summoned to Antioch; and finding nothing but the payment of the promised sum would do, sent orders to his brother Lyfimachus to convey to him as many of the sacred utensils belonging to the temple as could be spared. As these were all of gold, the apostate soon raised a sufficient sum from them, not only to satisfy the king, but also to bribe the courtiers in his favour. But his brother Onias, who had been all this time confined at Antioch, getting intelligence of the sacrilege, made such bitter complaints, that an insurrection was ready to take place among the Jews at Antioch. Menelaus, in order to avoid the impending danger, bribed Andronicus, governor of the city, to murder Onias. This produced the most vehement complaints as soon as Antiochus returned to the capital (he having been absent for some time in order to quell an insurrection in Cilicia); which at last ended in the death of Andronicus, who was executed by the king's order. By dint of money, however, Menelaus still found means to keep up his credit; but was obliged to draw such large sums from Jerusalem, that the inhabitants at last massacred his brother Lyfimachus, whom he had left governor of the city in his absence. Antiochus soon after took a journey to Tyre; upon which the Jews sent deputies to him, both to justify the death of Lyfimachus, and to accuse Menelaus of being the author of all the troubles which had happened. The apostate, however, was never at a loss while he could procure money. By means of this powerful argument he pleaded his cause so effectually, that the deputies were not only cast, but put to death; and this unjust sentence gave the traitor such a complete victory over all his enemies, that from thenceforth he commenced a downright tyrant. Jerusalem was destitute of protectors; and the sanhedrim, if there were any zealous men left among them, were so much terrified, that they durst not oppose him, though they evidently saw that his design was finally to eradicate the religion and liberties of his country.

In the mean time, Antiochus was taken up with the conquest of Egypt, and a report was some how or other spread that he had been killed at the siege of Alexandria. At this news the Jews imprudently showed some signs of joy; and Jason thinking this a proper opportunity to regain his lost dignity, appeared before Jerusalem at the head of about 1000 resolute men. The gates were quickly opened to him by some of his friends in the city; upon which Menelaus retired into the citadel, and Jason, minding nothing but his resentment, committed the most horrid butcheries. At last he was obliged to leave both the city and country, on the news that Antiochus was coming with a powerful army against him; for that prince, highly provoked at this rebellion, and especially at the rejoicings the Jews had made on the report of his death, had actually resolved to punish the city in the severest manner. Accordingly, about 170 B. C. having made himself master of the city, he behaved with such cruelty, that within three days they reckoned no fewer than 40,000 killed, and as many sold for slaves. In the midst of this dreadful calamity, the apostate Menelaus found means not only to preserve himself from the general slaughter, but even to regain the good graces of the

king, who, having by his means plundered the temple of every thing valuable, returned to Antioch in a kind of triumph. Before he departed, however, he put Judea under the government of one Philip, a barbarous Phrygian; Samaria under that of Andronicus, a person of a similar disposition; and left Menelaus, the most hateful of all the three, in possession of the high-priesthood.

Though the Jews suffered exceedingly under these tyrannical governors, they were still reserved for greater calamities. About 168 B. C. Antiochus having been most severely mortified by the Romans, took it into his head to wreak his vengeance on the unhappy Jews. For this purpose he dispatched Apollonius at the head of 22,000 men, with orders to plunder all the cities of Judea, to murder all the men, and sell the women and children for slaves. Apollonius accordingly came with his army, and to outward appearance with a peaceable intention; neither was he suspected by the Jews, as he was superintendent of the tribute in Palestine. He kept himself inactive till the next sabbath, when they were all in a profound quiet; and then, on a sudden, commanded his men to arms. Some of them he sent to the temple and synagogues, with orders to cut in pieces all whom they found there; whilst the rest going through the streets of the city massacred all that came in their way; the superstitious Jews not attempting to make the least resistance for fear of breaking the sabbath. He next ordered the city to be plundered and set on fire, pulled down all their stately buildings, caused the walls to be demolished, and carried away captive about 10,000 of those who had escaped the slaughter. From that time the service of the temple was totally abandoned; that place having been quite polluted, both with the blood of multitudes who had been killed, and in various other ways. The Syrian troops built a large fortress on an eminence in the city of David; fortified it with a strong wall and stately towers, and put a garrison in it to command the temple over-against which it was built, so that the soldiers could easily see and sally out upon all those who attempted to come into the temple; so many of whom were continually plundered and murdered by them, that the rest, not daring to stay any longer in Jerusalem, fled for refuge to the neighbouring nations.

Antiochus, not yet satiated with the blood of the Jews, resolved either totally to abolish their religion, or destroy their whole race. He therefore issued out a decree that all nations within his dominions should forsake their old religion and gods, and worship those of the king under the most severe penalties. To make his orders more effectual, he sent overseers into every province to see them strictly put in execution; and as he knew the Jews were the only people who would disobey them, special directions were given to have them treated with the utmost severity. Athenæas, an old and cruel minister, well versed in all the pagan rites, was sent into Judea. He began by dedicating the temple to Jupiter Olympius, and setting up his statue on the altar of burnt-offerings. Another lesser altar was raised before it, on which they offered sacrifices to that false deity. All who refused to come and worship this idol were either massacred or put to some cruel tortures till they either complied or expired under the hands of the executioners. At the same time, altars, groves,

Jerusalem
taken by
Antiochus
Epiphanes.

Jew. groves, and statues, were raised every where through the country, and the inhabitants compelled to worship them under the same severe penalties; while it was instant death to observe the sabbath, circumcision, or any other institution of Moses.

¹² At last, when vast numbers had been put to cruel **Restored by** deaths, and many more had saved their lives by their **Mattathias** apostacy, an eminent priest, named *Mattathias*, began to signalize himself by his bravery and zeal for religion. He had for some time been obliged to retire to Modin his native place, in order to avoid the persecution which raged at Jerusalem. During his recess there, Apelles, one of the king's officers, came to oblige the inhabitants to comply with the abovementioned orders. By him Mattathias and his sons were addressed in the most earnest manner, and had the most ample promises made them of the king's favour and protection if they would renounce their religion. But Mattathias answered, that though the whole Jewish nation, and the whole world, were to conform to the king's edict, yet both he and his sons would continue faithful to their God to the last minute of their lives. At the same time perceiving one of his countrymen just going to offer sacrifices to an idol, he fell upon him and instantly killed him, agreeable to the law of Moses in such cases. Upon this his sons, fired with the same zeal, killed the officer and his men; overthrew the altar and idol; and running about the city, cried out, that those who were zealous for the law of God should follow them; by which means they quickly saw themselves at the head of a numerous troop, with whom they soon after withdrew into some of the deserts of Judea. They were followed by many others, so that in a short time they found themselves in a condition to resist their enemies; and having considered the danger to which they were exposed by their scrupulous observance of the sabbath, they resolved to defend themselves, in case of an attack, upon that day as well as upon any other.

In the year 167. B. C. Mattathias finding that his followers daily increased in number, began to try his strength by attacking the Syrians and apostate Jews. As many of these as he took he put to death, but forced a much greater number to fly for refuge into foreign countries; and having soon struck his enemies with terror, he marched from city to city, overturned the idolatrous altars, opened the Jewish synagogues, made a diligent search after all the sacred books, and caused fresh copies of them to be written; he also caused the reading of the Scriptures to be resumed, and all the males born since the persecution to be circumcised. In all this he was attended with such success, that he had extended his reformation through a considerable part of Judea within the space of one year; and would probably have completed it, had he not been prevented by death.

¹³ **Exploits of** **Judas Mac-** **cabeus.** Mattathias was succeeded by his son Judas, surnamed *Maccabeus*, the greatest uninspired hero of whom the Jews can boast. His troops amounted to no more than 6000 men; yet with these he quickly made himself master of some of the strongest fortresses of Judea, and became terrible to the Syrians, Samaritans, and apostate Jews. In one year he defeated the Syrians in five pitched battles, and drove them quite out of the country; after which he purified the temple, and restored the true worship, which had been interrupted for three years and a half. Only one obstacle now re-

mained, viz. the Syrian garrison above mentioned, which had been placed over against the temple, and which Judas could not at present reduce. In order to prevent them from interrupting the worship, however, he fortified the mountain on which the temple stood, with an high wall and strong towers round about, leaving a garrison to defend it; making some additional fortifications at the same time to Bethzura, a fortress at about 20 miles distance.

In the mean time Antiochus being on his return from an unsuccessful expedition into Persia, received the disagreeable news that the Jews had all to a man revolted, defeated his generals, driven their armies out of Judea, and restored their ancient worship. This threw him into such a fury, that he commanded his charioteer to drive with the utmost speed, threatening utterly to extirpate the Jewish race, without leaving a single person alive. These words were scarce uttered, when he was seized with a violent pain in his bowels, which no remedy could cure or abate. But notwithstanding this violent shock, suffering himself to be hurried away by the transports of his fury, he gave orders for proceeding with the same precipitation in his journey. But while he was thus hastening forward, he fell from his chariot, and was so bruised by the fall, that his attendants were forced to put him into a litter. Not being able to bear even the motion of the litter, he was forced to halt at a town called *Tabs* on the confines of Persia and Babylonia. Here he kept his bed, suffering inexpressible torments, occasioned chiefly by the vermin which bred in his body, and the stench, which made him insupportable even to himself. But the torments of his mind, caused by his reflecting on the former actions of his life, surpassed by many degrees those of his body. Polybius, who in his account of this prince's death agrees with the Jewish historians, tells us, that the uneasiness of his mind grew at last to a constant delirium or state of madness, by reason of several spectres and apparitions of evil genii or spirits, which he imagined were continually reproaching him with the many wicked actions of which he had been guilty. At last, having languished for some time in this miserable condition, he expired, and by his death freed the Jews from the most inveterate enemy they had ever known.

Notwithstanding the death of Antiochus, however, the war was still carried on against the Jews; but through the valour and good conduct of Judas, the Syrians were constantly defeated, and in 163 B. C. a peace was concluded upon terms very advantageous to the Jewish nation. This tranquillity, however, was of no long continuance; the Syrian generals renewed their hostilities, and were attended with the same ill success as before. Judas defeated them in five engagements; but in the sixth was abandoned by all his men except 800, who, together with their chief, were slain in the year 161 B. C.

¹⁵ **Exploits of** The news of the death of Judas threw his country- **Simon, and** **Hyrca-** men into the utmost consternation, and seemed to give Jonathan, new life to all their enemies. He was succeeded, however, by his brother Jonathan; who conducted matters with no less prudence and success than Judas had done, till he was treacherously seized and put to death by Tryphon, a Syrian usurper, who shortly after murdered his own sovereign. The traitor immediately prepared to invade Judea; but found all his projects frustrated.

Jews.

frustrated by Simon, Jonathan's brother. This pontiff repaired all the fortresses of Judea, and furnished them with fresh garrisons, took Joppa and Gaza, and drove out the Syrian garrison from the fortrefs of Jerusalem; but was at last treacherously murdered by a son-in-law named *Ptolemy*, about 135 B. C.

Simon was succeeded by his son Hyrcan; who not only shook off the yoke of Syria, but conquered the Samaritans, demolished their capital city, and became master of all Palestine, to which he added the provinces of Samaria and Galilee; all which he enjoyed till within a year of his death, without the least disturbance from without, or any internal discord. His reign was no less remarkable on the account of his great wisdom and piety at home than his conquests abroad. He was the first since the captivity who had assumed the royal title; and he raised the Jewish nation to a greater degree of splendor than it had ever enjoyed since that time. The author of the fourth book of the *Maccabees* also informs us, that in him three dignities were centered which never met in any other person, namely, the royal dignity, the high-priesthood, and the gift of prophecy. But the instances given of this last are very equivocal and suspicious. The last year of his reign, however, was imbibited by a quarrel with the Pharisees; and which proceeded such a length as was thought to have shortened his days. Hyrcan had always been a great friend to that sect, and they had hitherto enjoyed the most honourable employments in the state; but at length one of them, named *Eleazar*, took it into his head to question Hyrcan's legitimacy, alleging, that his mother had formerly been a slave, and consequently that he was incapable of enjoying the high-priesthood. This report was credited, or pretended to be so, by the whole sect; which irritated the high-priest to such a degree, that he joined the Sadducees, and could never afterwards be reconciled to the Pharisees, who therefore raised all the troubles and seditions they could during the short time he lived.

16
Alexander
Jannæus, a
great con-
queror.

Hyrcan died in 107 B. C. and was succeeded by his eldest son Aristobulus, who conquered Iturea, but proved a most cruel and barbarous tyrant, polluting his hands with the blood even of his mother and one of his brothers, keeping the rest closely confined during his reign, which, however, was but short. He was succeeded in 105 by Alexander Jannæus, the greatest conqueror, next to king David, that ever sat on the Jewish throne. He was hated, however, by the Pharisees, and once in danger of being killed in a tumult excited by them; but having caused his guards to fall upon the mutinous mob, they killed 6000 of them, and dispersed the rest. After this, finding it impossible to remain in quiet in his own kingdom, he left Jerusalem, with a design to apply himself wholly to the extending of his conquests; but while he was busied in subduing his foreign enemies, the Pharisees raised a rebellion at home. This was quashed in the year 86 B. C. and the rebels were treated in the most inhuman manner. The faction, however, was by this means so thoroughly quelled, that they never dared to lift up their heads as long as he lived; and Alexander having made several conquests in Syria, died about 79 B. C.

The king left two sons, Hyrcanus and Aristobulus; but bequeathed the government to his wife Alexandra

as long as she lived: but as he saw her greatly afraid, and not without reason, of the resentment of the Pharisees, he desired his queen, just before his death, to send for the principal leaders of that party, and pretend to be entirely devoted to them; in which case, he assured her, that they would support her and her sons after her in the peaceable possession of the government. With this advice the queen complied; but found herself much embarrassed by the turbulent Pharisees, who, after several exorbitant demands, would at last be contented with nothing less than the total extermination of their adversaries the Sadducees. As the queen was unable to resist the strength of the pharisaic faction, a most cruel persecution immediately took place against the Sadducees, which continued for four years; until at last, upon their earnest petition, they were dispersed among the several garrisons of the kingdom, in order to secure them from the violence of their enemies. A few years after this, being seized with a dangerous sickness, her youngest son Aristobulus collected a strong party in order to secure the crown to himself; but the queen, being displeased with his conduct, appointed her other son Hyrcanus, whom she had before made high-priest, to succeed her also in the royal dignity. Soon after this she expired, and left her two sons competitors for the crown. The Pharisees raised an army against Aristobulus, which almost instantly deserted to him, so that Hyrcanus found himself obliged to accept of peace upon any terms; which, however, was not granted, till the latter had abandoned all title both to the royal and pontifical dignity, and contented himself with the enjoyment of his peculiar patrimony as a private person.

But this deposition did not extinguish the party of Hyrcanus. A new cabal was raised by Antipater an Idumæan proselyte, and father of Herod the Great; who carried off Hyrcanus into Arabia, under pretence that his life was in danger if he remained in Judea. Here he applied to Aretas king of that country, who undertook to restore the deposed monarch; and for that purpose invaded Judea, defeated Aristobulus, and kept him closely besieged in Jerusalem. The latter had recourse to the Romans; and having bribed Scaurus, one of their generals, he defeated Aretas with the loss of 7000 of his men, and drove him quite out of the country. The two brothers next sent presents to Pompey, at that time commander in chief of all the Roman forces in the east, and whom they made the arbitrator of their differences. But he, fearing that Aristobulus, against whom he intended to declare, might obstruct his intended expedition against the Nabatheans, dismissed them with a promise, that as soon as he had subdued Aretas, he would come into Judea and decide their controversy.

This delay gave such offence to Aristobulus, that he suddenly departed for Judea without even taking leave of the Roman general, who on his part was no less offended at this want of respect. The consequence was, that Pompey entered Judea with those troops with which he had designed to act against the Nabatheans, and summoned Aristobulus to appear before him. The Jewish prince would gladly have been excused; but was forced by his own people to comply with Pompey's summons, to avoid a war with that general. He came accordingly more than once or twice

Jews.
17
Contented by
tween his
sons Hyrcanus and
Aristobulus.

18
The Romans called
in by Aristobulus.

¹⁹ Jews. to him, and was dismissed with great promises and marks of friendship. But at last Pompey insisted, that he should deliver into his hands all the fortified places he possessed; which let Aristobulus plainly see that he was in the interest of his brother, and upon this he fled to Jerusalem with a design to oppose the Romans to the utmost of his power. He was quickly followed by Pompey; and to prevent hostilities was at last forced to go and throw himself at the feet of the haughty Roman, and to promise him a considerable sum of money as the reward of his forbearance. This submission was accepted; but Gabinius, being sent with some troops to receive the stipulated sum, was repulsed by the garrison of Jerusalem, who shut the gates against him, and refused to fulfil the agreement. This disappointment so exasperated Pompey, that he immediately marched with his whole army against the city.

¹⁹
Jerusalem
taken by
Pompey.

The Roman general first sent proposals of peace; but finding the Jews resolved to stand out to the last, he began the siege in form. As the place was strongly fortified both by nature and art, he might have found it very difficult to accomplish his design, had not the Jews been suddenly seized with a qualm of conscience respecting the observance of the sabbath-day. From the time of the Maccabees they had made no scruple of taking up arms against an offending enemy on the sabbath; but now they discovered, that though it was lawful on that day to stand on their defence in case they were actually attacked, yet it was unlawful to do any thing towards the preventing of those preparatives which the enemy made towards such future assaults. As therefore they never moved an hand to hinder the erection of mounds and batteries, or the making of breaches in their walls on the sabbath, the besiegers at last made such a considerable breach on that day, that the garrison could no longer resist them. The city was therefore taken in the year 63 B. C. 12,000 of the inhabitants were slaughtered, and many more died by their own hands; while the priests, who were offering up the usual prayers and sacrifices in the temple, chose rather to be butchered along with their brethren, than suffer divine service to be one moment interrupted. At last, after the Romans had fatiated their cruelty with the death of a vast number of the inhabitants, Hyrcanus was restored to the pontifical dignity with the title of *prince*; but forbid to assume the title of *king*, to wear a diadem, or to extend his territories beyond the limits of Judea. To prevent future revolts, the walls were pulled down; and Scaurus was left governor with a sufficient force. But before he departed, the Roman general gave the Jews a still greater offence than almost any thing he had hitherto done; and that was by entering into the most sacred recesses of the temple, where he took a view of the golden table, candlestick, censers, lamps, and all the other sacred vessels; but, out of respect to the Deity, forbore to touch any of them, and when he came out commanded the priests immediately to purify the temple according to custom.

Pompey having thus subdued the Jewish nation, set out for Rome, carrying along with him Aristobulus and his two sons Alexander and Antigonus, as captives to adorn his future triumph. Aristobulus himself and his son Antigonus were led in triumph; but A-

lexander found means to escape into Judea, where he raised an army of 10,000 foot and 1500 horse, and began to fortify several strong holds, from whence he made incursions into the neighbouring country. As for Hyrcanus, he had no sooner found himself freed from his rival brother, than he relapsed into his former indolence, leaving the care of all his affairs to Antipater, who, like a true politician, failed not to turn the weakness of the prince to his own advantage and the aggrandizing of his family. He foresaw, however, that he could not easily compass his ends, unless he ingratiated himself with the Romans; and therefore spared neither pains nor cost to gain their favour. Scaurus soon after received from him a supply of corn and other provisions, without which his army, which he had led against the metropolis of Arabia, would have been in danger of perishing; and after this, he prevailed on the king to pay 300 talents to the Romans, to prevent them from ravishing his country. Hyrcanus was now in no condition to face his enemy Alexander; and therefore had again recourse to the Romans, Antipater at the same time sending as many troops as he could spare to join them. Alexander ventured a battle; but was defeated with considerable loss, and besieged in a strong fortress named *Alexandrium*. Here he would have been forced to surrender; but his mother, partly by her address, and partly by the services she found means to do the Roman general, prevailed upon him to grant her son a pardon for what was past. The fortresses were then demolished, that they might not give occasion to fresh revolts; Hyrcanus was again restored to the pontifical dignity; and the province was divided into five several districts, in each of which a separate court of judicature was erected. The first of these was at Jerusalem, the second at Gadara, the third at Amath, the fourth at Jericho, and the fifth at Senhoris in Galilee. Thus was the government changed from a monarchy to an aristocracy, and the Jews now fell under a set of domineering lords.

²⁰
Jewish go-
vernment
changed
into an
aristocracy.

Soon after this, Aristobulus found means to escape from his confinement at Rome, and raised new troubles in Judea, but was again defeated and taken prisoner: his son also renewed his attempts; but was in like manner defeated, with the loss of near 10,000 of his followers; after which Gabinius, having settled the affairs of Judea to Antipater's mind, resigned the government of his province to Crassus. The only transaction during his government was his plundering the temple of all its money and sacred utensils, amounting in the whole to 10,000 Attic talents, i. e. above two millions of our money. After this sacrilege, Crassus set out on his expedition against Parthia, where he perished; and his death was by the Jews interpreted as a divine judgment for his impiety.

The war between Cæsar and Pompey afforded the Jews some respite, and likewise an opportunity of ingratiating themselves with the former, which the politic Antipater readily embraced. His services were rewarded by the emperor. He confirmed Hyrcanus in his priesthood, added to it the principality of Judea to be entailed on his posterity for ever, and restored the Jewish nation to their ancient rights and privileges; ordering at the same time a pillar to be erected, whereon all these grants, and his own decree, should be engraved.

²¹
Jews fa-
voured by
Cæsar.

Jews

graved, which was accordingly done; and soon after, when Cæsar himself came into Judea, he granted liberty also to fortify the city, and rebuild the wall which had been demolished by Pompey.

22
Herod
raised to
the Jewish
throne.

During the lifetime of Cæsar, the Jews were so highly favoured, that they could scarcely be said to feel the Roman yoke. After his death, however, the nation fell into great disorders; which were not finally quelled till Herod, who was created king of Judea by Marc Anthony in 40 B. C. was full established on the throne by the taking of Jerusalem by his allies the Romans in 37 B. C. The immediate consequence of this was another cruel pillage and massacre: then followed the death of Antigonus the son of Aristobulus, who had for three years maintained his ground against Herod, put to death his brother Phasael, and cut off Hyrcanus's ears, in order the more effectually to incapacitate him for the high-priesthood.

23
His tyranny
and cruelty.

The Jews gained but little by this change of masters. The new king proved one of the greatest tyrants mentioned in history. He began his reign with a cruel persecution of those who had sided with his rival Antigonus; great numbers of whom he put to death, seizing and confiscating their effects for his own use. Nay, such was his jealousy in this last respect, that he caused guards to be placed at the city-gates, in order to watch the bodies of those of the Antigonian faction who were carried out to be buried, lest some of their riches should be carried along with them. His jealousy next prompted him to decoy Hyrcanus, the banished pontiff, from Parthia, where he had taken refuge, that he might put him to death, tho' contrary to his most solemn promises. His cruelty then fell upon his own family. He had married Mariamne, the daughter of Hyrcanus; whose brother, Aristobulus, a young prince of great hopes, was made high-priest at the intercession of his mother Alexandra. But the tyrant, conscious that Aristobulus had a better right to the kingdom than himself, caused him soon after to be drowned in a bath. The next victim was his beloved queen Mariamne herself. Herod had been summoned to appear first before Marc Anthony, and then before Augustus, in order to clear himself from some crimes laid to his charge. As he was, however, doubtful of the event, he left orders, that in case he was condemned, Mariamne should be put to death. This, together with the death of her father and brother, gave her such an aversion for him, that she showed it on all occasions. By this conduct the tyrant's resentment was at last so much inflamed, that having got her falsely accused of infidelity, she was condemned to die, and executed accordingly. She suffered with great resolution; but with her ended all the happiness of her husband. His love for Mariamne increased so much after her death, that for some time he appeared like one quite distracted. His remorse, however, did not get the better of his cruelty. The death of Mariamne was soon followed by that of her mother Alexandra, and this by the execution of several other persons who had joined with her in an attempt to secure the kingdom to the sons of the deceased queen.

Herod, having now freed himself from the greatest part of his supposed enemies, began to show a greater contempt for the Jewish ceremonies than formerly; and introduced a number of heathenish games, which made

Nº 164.

Jews

him odious to his subjects. Ten bold fellows at last took it into their heads to enter the theatre where the tyrant was celebrating some games, with daggers concealed under their clothes, in order to stab him or some of his retinue. In case they should miscarry in the attempt, they had the desperate satisfaction to think, that, if they perished, the tyrant would be rendered still more odious by the punishment inflicted on them. They were not mistaken: for Herod being informed of their design by one of his spies, and causing the assassins to be put to a most excruciating death, the people were so much exasperated against the informer, that they cut and tore him to pieces, and cast his flesh to the dogs. Herod tried in vain to discover the authors of this affront; but at last having caused some women to be put to the rack, he extorted from them the names of the principal persons concerned, whom he caused immediately to be put to death with their families. This produced such disturbances, that, apprehending nothing less than a general revolt, he set about fortifying Jerusalem with several additional works, rebuilding Samaria, and putting garrisons into several fortresses in Judea. Notwithstanding this, however, Herod had shortly after an opportunity of regaining the affections of his subjects in some measure, by his generosity to them during a famine; but as he soon relapsed into his former cruelty, their love was again turned into hatred, which continued till his death.

Herod now, about 23 B. C. began to adorn his cities with many stately buildings. The most remarkable and magnificent of them all, however, was the temple at Jerusalem, which he is said to have raised to a higher pitch of grandeur than even Solomon himself had done. Ten thousand artificers were immediately set to work, under the direction of 1000 priests, the best skilled in carving, masonry, &c. all of whom were kept in constant pay. A thousand carts were employed in fetching materials; and such a number of other hands were employed, that every thing was got ready within the space of two years. After this they set about pulling down the old building, and rearing up the new one with the same expedition; so that the *holy place*, or temple, properly so called, was finished in a year and an half; during which we are told that it never rained in the day-time, but only in the night. The remainder was finished in somewhat more than eight years. The temple, properly so called, or holy place, was but 60 cubits high, and as many in breadth; but in the front he added two wings or shoulders which projected 20 cubits more on each side, and which in all made a front of 120 cubits in length, and as many in height; with a gate 70 cubits high and 20 in breadth, but open and without any doors. The stones were white marble, 25 cubits in length, 12 in height, and 9 in breadth, all wrought and polished with exquisite beauty; the whole resembling a stately palace, whose middle being considerably raised above the extremities of each face, made it afford a beautiful vista at a great distance, to those who came to the metropolis. Instead of doors, the gates closed with very costly veils, enriched with a variety of flowering of gold, silver, purple, and every thing that was rich and curious; and on each side of the gates were planted two stately columns, from whose

24
Rebuilds
the temple.

^{Jews.} whose cornices hung golden festoons and vines, with their clusters of grapes, leaves, &c. curiously wrought. The superstructure, however, which was properly reared on the old foundation without sufficient additions, proved too heavy, and sunk down about 20 cubits; so that its height was reduced to 100. This foundation was of an astonishing strength and height, of which an account is given under the article JERUSALEM. The platform was a regular square of a stadium or furlong on each side. Each front of the square had a spacious gate or entrance, enriched with suitable ornaments; but that on the west had four gates, one of which led to the palace, another to the city, and the two others to the suburbs and fields. This inclosure was surrounded on the outside with a strong and high wall of large stones, well cemented; and on the inside had on each front a stately piazza or gallery, supported by columns of such a bigness, that three men could but just embrace them, their circumference being about 27 feet. There were in all 162 of them, which supported a cedar ceiling of excellent workmanship, and formed three galleries, the middlemost of which was the largest and highest, it being 45 feet in breadth and 100 in height, whereas those on each side were but 30 feet wide and 50 in height.

The piazzas and court were paved with marble of various colours; and, at a small distance from the galleries, was a second inclosure, surrounded with a flight of beautiful marble rails, with stately columns at proper distances, on which were engraven certain admonitions in Greek and Latin, to forbid strangers, and those Jews that were not purified, to proceed farther under pain of death. This inclosure had but one gate on the east side; none on the west; but on the north and south it had three, placed at equal distances from each other.

A third inclosure surrounded the temple, properly so called, and the altar of burnt-offerings; and made what they called *the court of the Hebrews or Israelites*. It was square like the rest: but the wall on the outside was surrounded by a flight of 14 steps, which hid a considerable part of it; and on the top was a terrace, of about 12 cubits in breadth, which went quite round the whole cincture. The east side had but one gate; the west none; and the north and south four, at equal distances. Each gate was ascended by five steps more before one could reach the level of the inward court; so that the wall which inclosed it appeared within to be but 25 cubits high, though considerably higher on the outside. On the inside of each of those gates were raised a couple of spacious square chambers, in form of a pavilion, 30 cubits wide and 40 in height, each supported by columns of 12 cubits in circumference.

This inclosure had likewise a double flight of galleries on the inside, supported by a double row of columns; but the western side was only one continued wall, without gates or galleries. The women had likewise their particular courts separate from that of the men, and one of the gates on the north and south leading to it.

The altar of burnt-offerings was likewise high and spacious, being 40 cubits in breadth, and 15 in height. The ascent to it was, according to the Mosaic law, smooth, and without steps; and the altar of unhewn

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stones. It was surrounded, at a convenient distance, with a low wall or rail, which divided the court of the priests from that of the lay Israelites; so that these last were allowed to come thus far to bring their offerings and sacrifices; though none but the priests were allowed to come within that inclosure.

Herod caused a new dedication of this temple to be performed with the utmost magnificence; and presented to it many rich trophies of his former victories, after the custom of the Jewish monarchs.

This, and many other magnificent works, however, did not divert the king's attention from his usual jealousies and cruelty. His sister Salome, and one of his sons named *Antipater*, taking advantage of this disposition, prompted him to murder his two sons by Mariamne, named *Alexander* and *Aristobulus*, who had been educated at the court of Augustus in Italy, and were justly admired by all who saw them. His cruelty soon after broke out in an impotent attempt to destroy the Saviour of the world, but which was attended with no other consequence than the destruction of 2000 innocent children of his own subjects. His misery was almost brought to its summit by the discovery of Antipater's designs against himself; who was accordingly tried and condemned for treason. Something still more dreadful, however, yet awaited him; he was seized with a most loathsome and incurable disease, in which he was tormented with intolerable pains, so that his life became a burden. At last he died, to the ²⁵ great joy of the Jews, five days after he had put Antipater to death, and after having divided his kingdom among his sons in the following manner.—Archelaus had Judea; Antipas, or Herod, was tetrarch of Galilee and Perea; and Philip had the regions of Trachonitis, Gaulon, Batanea, and Panias, which he erected likewise into a tetrarchy. To his sister Salome he gave 50,000 pieces of money, together with the cities of Jamnia, Azotus, and Phasaelis; besides some considerable legacies to his other relations.

The cruelty of this monster accompanied him to his grave; nay, he in a manner carried it beyond the grave. Being well apprised that the Jews would rejoice at being freed from such a tyrant, he bethought himself of the following infernal stratagem to damp their mirth. A few days before his death, he summoned all the heads of the Jews to repair to Jericho under pain of death; and, on their arrival, ordered them all to be shut up in the circus, giving at the same time strict orders to his sister Salome and her husband to have all the prisoners butchered as soon as his breath was gone out. "By this means (said he), I shall not only damp the people's joy, but secure a real mourning at my death." These cruel orders, however, were not put in execution. Immediately after the king's death, Salome went to the Hippodrome, where the heads of the Jews were detained, caused the gates to be swung open, and declared to them, that now the king had no farther occasion for their attendance, and that they might depart to their respective homes; after which, and not till then, the news of the king's death was published. Tumults, seditions, and insurrections, quickly followed. Archelaus was ²⁶ opposed by his brethren, and obliged to appear at Rome ^{New divi-} before Augustus, to whom many complaints were ^{sion of the} kingdom brought against him. After hearing both parties, ^{by Augustus} the

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Jew.

the emperor made the following division of the kingdom: Archelaus had one half, under the title of *ethnarch*, or governor of a nation; together with a promise that he should have the title of *king*, as soon as he showed himself worthy of it. This ethnarchy contained Judea Propria, Idumea, and Samaria: but this last was exempted from one-fourth of the taxes paid by the rest, on account of the peaceable behaviour of the inhabitants during the late tumults. The remainder was divided between Philip and Herod; the former of whom had Trachonitis, Batanea, and Auranitis, together with a small part of Galilee; the latter had the rest of Galilee and the countries beyond the Jordan. Salome had half a million of silver, together with the cities of Jamnia, Azotus, Phasaelis, and Ascalon.

27
Archelaus
banished,
and a Ro-
man gover-
nor ap-
pointed
over Ju-
dea.

For some years Archelaus enjoyed his government in peace; but at last, both Jews and Samaritans, tired out with his tyrannical behaviour, joined in a petition to Augustus against him: The emperor immediately summoned him to Rome, where, having heard his accusation and defence, he banished him to the city of Vienne in Dauphiny, and confiscated all his effects. Judea being by this sentence reduced to a Roman province, was ordered to be taxed: and Cyrenius the governor of Syria, a man of consular dignity, was sent thither to see it put in execution: which having done, and sold the palaces of Archelaus, and seized upon all his treasure, he returned to Antioch, leaving the Jews in no small ferment on account of this new tax.

Thus were the seeds of dissension sown between the Jews and Romans, which ended in the most lamentable catastrophe of the former. The Jews, always impatient of a foreign yoke, knew from their prophecies, that the time was now come when the Messiah should appear. Of consequence, as they expected him to be a great and powerful warrior, their rebellious and seditious spirit was heightened to the greatest degree; and they imagined they had nothing to do but take up arms, and victory would immediately declare on their side. From this time, therefore, the country was never quiet; and the infatuated people, while they rejected the true Messiah, gave themselves up to the direction of every impostor who chose to lead them to their own destruction. The governors appointed by the Romans were also frequently changed, but seldom for the better. About the 16th year of Christ, Pontius Pilate was appointed governor; the whole of whose administration, according to Josephus, was one continued scene of venality, rapine, tyranny, and every wicked action; of racking and putting innocent men to death, untried and uncondemned; and of every kind of savage cruelty. Such a governor was but ill calculated to appease the ferments occasioned by the late tax. Indeed Pilate was so far from attempting this, that he greatly inflamed them by taking every occasion of introducing his standards with images and pictures, consecrated shields, &c. into their city; and at last attempting to drain the treasury of the temple, under pretence of bringing an aqueduct into Jerusalem. The most remarkable transaction of his government, however, was his condemnation of Jesus Christ: seven years after which he was removed from Judea; and in a short time Agrippa, the grand-

son of Herod the Great, was promoted by Caius to the regal dignity. He did not, however, long enjoy this honour; for, on his coming into Judaea, having raised a persecution against the Christians, and blasphemously suffering himself to be styled a *God* by some deputies from Tyre and Sidon, he was miraculously struck with a disease, which soon put an end to his life. The sacred historian tells us, that he was eaten of worms; and Josephus, that he was seized with most violent pains in his heart and bowels; so that he could not but reflect on the baseness of those flatterers, who had but lately complimented him with a kind of divine immortality, that was now about to expire in all the torments and agonies of a miserable mortal.

On the death of Agrippa, Judaea was once more reduced to a province of the Roman empire, and had new governors appointed over it. These were Ventidius, Felix, Festus Albinus, and Gessius Florus. Under their government the Jewish affairs went on from bad to worse; the country swarmed with robbers and assassins; the latter committing every where the most unheard-of cruelties under the pretence of religion; and about 64 A. C. were joined by 18,000 workmen, who had been employed in further repairing and beautifying the temple. About this time also, Gessius Florus, the last and worst governor the Jews ever had, was sent into the country. Josephus seems at a loss for words to describe him by, or a monster to compare him to. His rapines, cruelties, conniving for large sums with the banditti, and, in a word, his whole behaviour, were so open and barefaced, that he was looked upon by the Jews more like a bloody executioner sent to butcher, than a magistrate to govern them. In this distracted state of the country, many of the inhabitants forsook it to seek for an asylum somewhere else; while those who remained applied themselves to Cestius Gallus, governor of Syria, who was at Jerusalem at the passover; beseeching him to pity their unhappy state, and free them from the tyranny of a man who had totally ruined their country. Florus, who was present when these complaints were brought against him, made a mere jest of them; and Cestius, instead of making a strict inquiry into his conduct, dismissed the Jews with a general promise that the governor should behave better for the future; and set himself about computing the number of Jews at that time in Jerusalem, by the number of lambs offered at that festival, that he might send an account of the whole to Nero. By his computation, there were at that time in Jerusalem 2,556,000; tho' Josephus thinks they rather amounted to 3,000,000.

In the year 67 began the fatal war with the Romans, which was ended only by the destruction of Jerusalem. The immediate cause was the decision of a contest with the Syrians concerning the city of Caesarea. The Jews maintained that this city belonged to them, because it had been built by Herod; and the Syrians pretended that it had always been reckoned a Greek city, since even that monarch had reared temples and statues in it. The contest at last came to such an height, that both parties took up arms against each other. Felix put an end to it for a time, by sending some of the chiefs of each nation to Rome, to plead their

³² ^{Jews} their cause before the emperor, where it hung in suspense till this time, when Nero decided it against the Jews. No sooner was this decision made public, than the Jews in all parts of the country flew to arms; and though they were every where the sufferers, yet, from this fatal period, their rage never abated. Nothing was now to be heard of but robberies, murders, and every kind of cruelty. Cities and villages were filled with dead bodies of all ages, even sucking babes. The Jews, on their part, spared neither Syrians nor Romans, where they got the better of them; and this proved the destruction of great numbers of their peaceful brethren: 20,000 were massacred at Casarea, 50,000 at Alexandria, 2000 at Ptolemais, and 3500 at Jerusalem.

³² The Jews terribly massacred.

A great number of assassins, in the mean time, having joined the factious Jews in Jerusalem, they beat the Romans out of Antonia, a fortress adjoining to the temple, and another called *Massada*; and likewise out of the towers called *Phasael* and *Mariamne*, killing all who opposed them. The Romans were at last reduced to such straits, that they capitulated on the single condition that their lives should be spared; notwithstanding which, they were all massacred by the furious zealots: and this treachery was soon revenged on the faithful Jews of Scythopolis. These had offered to assist in reducing their factious brethren; but their sincerity being suspected by the townsmen, they obliged them to retire into a neighbouring wood, where, on the third night, they were massacred to the number of 13,000, and all their wealth carried off. The rebels, in the mean time, crossed the Jordan, and took the fortresses of Machæron and Cyprus; which last they razed to the ground, after having put all the Romans to the sword.—This brought Cestius Gallus, the Syrian governor, into Judæa with all his forces; but the Jews, partly by treachery and partly by force, got the better of him, and drove him out of the country with the loss of 5000 men.

³² They defeated Cestius Gallus.

³³ Vespasian sent against them.

All this time such dreadful dissensions reigned among the Jews, that great numbers of the better sort foreseeing the sad effects of the resentment of the Romans, left the city as men do a sinking vessel; and the Christians, mindful of their Saviour's prediction, retired to Pella, a city on the other side of Jordan, whether the war did not reach. Miserable was the fate of such as either could not, or would not, leave that devoted city. Vespasian was now ordered to leave Greece, where he was at that time, and to march with all speed into Judea. He did so accordingly at the head of a powerful army, ordering his son Titus in the mean time to bring two more legions from Alexandria; but before he could reach that country, the Jews had twice attempted to take the city of Ascalon, and were each time repulsed with the loss of 10,000 of their number. In the beginning of the year 68, Vespasian entered Galilee at the head of an army of 60,000 men, all completely armed and excellently disciplined. He first took and burnt Gadara: then he laid siege to Jotapa, and took it after a stout resistance; at which he was so provoked, that he caused every one of the Jews to be massacred or carried into captivity, not one being left to carry the dreadful news to their brethren. Forty thousand perished on this occasion:

only 1200 were made prisoners, among whom was Josephus the Jewish historian. Japha next shared the same fate, after an obstinate siege; all the men being massacred, and the women and children carried into captivity. A week after this the Samaritans, who had assembled on Mount Gerizzim, were almost all put to the sword, or perished. Joppa fell the next victim to the Roman vengeance. It had been formerly laid waste by Cestius; but was now re-peopled and fortified by the seditious Jews who infested the country. It was taken by storm, and shared the same fate with the rest. Four thousand Jews attempted to escape by taking to their ships; but were driven back by a sudden tempest, and all of them were drowned or put to the sword. Tarichea and Tiberias were next taken, but part of their inhabitants were spared on account of their peaceable dispositions. Then followed the sieges of Gamala, Gischala, and Itabyr. The first was taken by storm, with a dreadful slaughter of the Jews; the last by stratagem. The inhabitants of Gischala were inclinable to surrender; but a seditious Jew of that town, named *John*, the son of Levi, head of the faction, and a vile fellow, opposed it; and, having the mob at his back, overawed the whole city. On the sabbath he begged of Titus to forbear hostilities till to-morrow, and then he would accept his offer; but instead of that, he fled to Jerusalem with as many as would follow him. The Romans, as soon as they were informed of his flight, pursued; and killed 6000 of his followers on the road, and brought back near 3000 women and children prisoners. The inhabitants then surrendered to Titus, and only the factious were punished; and this completed the reduction of Galilee.

The Jewish nation by this time was divided into ³⁴ Different two very opposite parties: the one foreseeing that factions among the their country, were for putting an end to it by submitting to the Romans; the other, which was the remains of the faction of Judas Gaulonites, breathed nothing but war and confusion, and opposed all peaceable measures with invincible obstinacy. This last, which was by far the most numerous and powerful, consisted of men of the vilest and most profligate characters that can be paralleled in history. They were proud, ambitious, cruel, rapacious, and committed the most horrid and unnatural crimes under the mask of religion. They affirmed every where, that it was offering the greatest dishonour to God to submit to any earthly potentate; much less to Romans and to heathens. This, they said, was the only motive that induced them to take up arms, and to bind themselves under the strictest obligations not to lay them down till they had either totally extirpated all foreign authority, or perished in the attempt.—This dreadful dissension was not confined to Jerusalem, but had infected all the cities, towns, and villages, of Palestine. Even houses and families were so divided against each other, that, as our Saviour had expressly foretold, a man's greatest enemies were often those of his own family and household. In short, if we may believe Josephus, the zealots acted more like incarnate devils than like men who had any sense of humanity left them.—This obliged the contrary party likewise to rise up in arms in their own defence against those miscreants; from whom, however, they suffered much

^{Jews}

Jews.
35
Cruelty of
the zealots.

more than they did even from the exasperated Romans.—The zealots began their outrages by murdering all that opposed them in the countries round about. Then they entered Jerusalem; but met with a stout opposition from the other party headed by Ananus, who had lately been high-priest. A fierce engagement ensued between them; and the zealots were driven into the inner cincture of the temple, where they were closely besieged. John of Gischala above mentioned, who had pretended to side with the peaceable party, was then sent with terms of accommodation; but, instead of advising the besieged to accept of them, he persuaded them still to hold out, and call the Idumeans to their assistance. They did so, and procured 20,000 of them to come to their relief; but these new allies were refused admittance into the city. On that night, however, there happened such a violent storm, accompanied with thunder, lightning, and an earthquake, that the zealots from within the inner court saw the bolts and hinges of the temple-gates without being heard, forced the guards of the besiegers, sallied into the city, and led in the Idumeans. The city was instantly filled with butcheries of the most horrid kind. Barely to put any of the opposite party to death was thought too mild a punishment; they must have the pleasure of murdering them by inches: so that they made it now their diversion to put them to the most exquisite tortures that could be invented; nor could they be prevailed upon to dispatch them till the violence of their torments had rendered them quite incapable of feeling them. In this manner perished 12,000 persons of noble extraction, and in the flower of their age; till at last the Idumeans complained so much against the putting such numbers to death, that the zealots thought proper to erect a kind of tribunal, which, however, was intended not for judgment but condemnation; for the judges having once acquitted a person who was manifestly innocent, the zealots not only murdered him in the temple, but deposed the new-created judges as persons unfit for their office.

36
They turn
their arms
against each
other.

The zealots, after having exterminated all those of any character or distinction, began next to wreak their vengeance on the common people. This obliged many of the Jews to forsake Jerusalem, and take refuge with the Romans, though the attempt was very hazardous; for the zealots had all the avenues well guarded, and failed not to put to death such as fell into their hands. Vespasian in the mean time staid at Cæsarea an idle spectator of their outrages; well knowing that the zealots were fighting for him, and that the strength of the Jewish nation was gradually wasting away. Every thing succeeded to his wish. The zealots, after having massacred or driven away the opposite party, turned their arms against each other. A party was formed against John, under one Simon who had his head-quarters at the fortress of Massada. This new miscreant plundered, burned, and massacred, wherever he came, carrying the spoil into the fortress above mentioned. To increase his party, he caused a proclamation to be published, by which he promised liberty to the slaves, and proportionable encouragement to the freemen who joined him. This stratagem had the desired effect, and he soon saw himself at the head of a considerable army.

Jews.

Not thinking himself, however, as yet master of force sufficient to besiege Jerusalem, he invaded Idumea with 20,000 men. The Idumeans opposed him with 25,000; and a sharp engagement ensued, in which neither party was victorious. But Simon, soon after, having corrupted the Idumean general, got their army delivered up to him. By this means he easily became master of the country; where he committed such cruelties, that the miserable inhabitants abandoned it to seek for shelter in Jerusalem.

In the city, matters went in the same way. John tyrannized in such a manner, that the Idumeans revolted, killed a great number of his men, plundered his palace, and forced him to retire into the temple. In the mean time the people, having taken a notion that he would sally out in the night and set fire to the city, called a council, in which it was resolved to admit Simon with his troops, in order to oppose John and his zealots. Simon's first attempt against his rival, however, was ineffectual, and he was obliged to content himself with besieging the zealots in the temple. In the mean time the miseries of the city were increased by the starting up of a third party headed by one Eleazar, who seized on the court of the priests, and kept John confined within that of the Israelites. Eleazar kept the avenues so well guarded, that none were admitted to come into that part of the temple but those who came thither to offer sacrifices; and it was by these offerings chiefly that he maintained himself and his men. John by this means found himself hemmed in between two powerful enemies, Simon below, and Eleazar above. He defended himself, however, against them both with great resolution; and when the city was invested by the Romans, having pretended to come to an agreement with his rivals, he found means totally to cut off or force Eleazar's men to submit to him, so that the factions were again reduced to two.

The Romans, in the year 72, began to advance to-³⁷wards the capital. In their way they destroyed many ^{The Ro-}thousands, wasting the country as they went along; ^{mans ad-}and in the year 73 arrived before the walls of Jerusa-^{vance to}lem, under Titus afterwards emperor. As he was a man of an exceedingly merciful disposition, and greatly desired to spare the city, he immediately sent offers of peace; but these were rejected with contempt, and he himself put in great danger of his life, so that he resolved to begin the siege in form. In the mean time, Simon and John renewed their hostilities with greater fury than ever. John now held the whole temple, some of the out-parts of it, and the valley of Cedron. Simon had the whole city to range in; in some parts of which John had made such devastations, that they served them for a field of battle, from which they sallied unanimously against the common enemy whenever occasion served; after which they returned to their usual hostilities, turning their arms against each other, as if they had sworn to make their ruin more easy to the Romans. These drew still nearer to the walls, having with great labour and pains levelled all the ground between Scopas and them, by pulling down all the houses and hedges, cutting down the trees, and even cleaving the rocks that stood in their way, from Scopas to the tomb of Herod, and Bethara or the pool of serpents; in which work so many hands

³⁸ Jews hands were employed, that they finished it in four days.

Offers of peace rejected.

³⁹ The siege carried on with vigour.

Whilst this was doing, Titus sent the besieged some offers of peace; and Josephus was pitched upon to be the messenger of them: but they were rejected with indignation. He sent a second time Nicanor and Josephus with fresh offers, and the former received a wound in his shoulder; upon which Titus resolved to begin the assault in good earnest, and ordered his men to rase the suburbs, cut down all the trees, and use the materials to raise platforms against the wall. Every thing was now carried on with invincible ardour; the Romans began to play their engines against the city with all their might. The Jews had likewise their machines upon the walls, which they plied with uncommon fury: they had taken them lately from Cestius: but were so ignorant in their use, that they did little execution with them, till they were better instructed by some Roman deserters: till then, their chief success was rather owing to their frequent sallies; but the Roman legions, who had all their towers and machines before them, made terrible havoc. The least stones they threw were near 100 weight; and these they could throw the length of a quarter of a mile against the city, and with such a force, that they could do mischief on those that stood at some distance behind them. Titus had reared three towers 50 cubits high; one of which happening to fall in the middle of the night, greatly alarmed the Roman camp, who immediately ran to arms at the noise of it; but Titus, upon knowing the cause, dismissed them, and caused it to be set up again. These towers, being plated with iron, the Jews tried in vain to set fire to them, but were at length forced to retire out of the reach of their shot; by which the battering-rams were now at full liberty to play against the wall. A breach was soon made in it, at which the Romans entered; and the Jews, abandoning this last inclosure, retired behind the next. This happened about the 28th of April, a fortnight after the beginning of the siege.

John defended the temple and the castle of Antonia, and Simon the rest of the city. Titus marched close to the second wall, and plied his battering-rams so furiously, that one of the towers, which looked towards the north, gave a prodigious shake. The men who were in it, made a signal to the Romans, as if they would surrender; and, at the same time, sent Simon word to be ready to give them a warm reception. Titus, having discovered their stratagem, plied his work more furiously, whilst the Jews that were in the tower set it on fire, and flung themselves into the flames. The tower being fallen, gave them an entrance into the second inclosure, five days after gaining the first; and Titus, who was bent on saving the city, would not suffer any part of the wall or streets to be demolished; which left the breach and lanes so narrow, that when his men were furiously repulsed by Simon, they had not room enough to make a quick retreat, so that there was a number of them killed in it. This oversight was quickly rectified; and the attack renewed with such vigour, that the place was carried four days after their first repulse.

⁴⁰ Famine and pestilence in the city.

The famine, raging in a terrible manner in the city, was soon followed by a pestilence; and as these two dreadful judgments increased, so did the rage of the

factious, who, by their intestine feuds, had destroyed such quantities of provision, that they were forced to prey upon the people with the most unheard-of cruelty. They forced their houses; and, if they found any victuals in them, they butchered them for not appropriating them of it; and, if they found nothing but bare walls, which was almost every where the case, they put them to the most severe tortures, under pretence that they had some provision concealed. "I should (says Josephus) undertake an impossible task, were I to enter into a detail of all the cruelties of those impious wretches; it will be sufficient to say, that I do not think, that since the creation any city ever suffered such dreadful calamities, or abounded with men so fertile in all kinds of wickedness."

Titus, who knew their miserable condition, and was still willing to spare them, gave them four days to cool; during which he caused his army to be mustered, and provisions to be distributed to them in sight of the Jews, who flocked upon the walls to see it. Josephus was sent to speak to them afresh, and to exhort them not to run themselves into an inevitable ruin by obstinately persisting in the defence of a place which could hold out but a very little while, and which the Romans looked upon already as their own. But this stubborn people, after many bitter invectives, began to dart their arrows at him; at which, not at all discouraged, he went on with greater vehemence: but all the effect it wrought on them was, that it prevailed on great numbers to steal away privately to the Romans, whilst the rest became only the more desperate and resolute to hold out to the last, in spite of Titus's merciful offers.

⁴¹ Offers of peace rejected.

To hasten therefore their destined ruin, he caused the city to be surrounded with a strong wall, to prevent either their receiving any succours or provision from abroad, or their escaping his resentment by flight. This wall, which was near 40 stadia or five miles in circuit, was yet carried on with such speed, and by so many hands, that it was finished in three days; by which one may guess at the ardour of the besiegers to make themselves masters of the city.

There was now nothing to be seen thro' the streets of Jerusalem but heaps of dead bodies rotting above ground, walking skeletons, and dying wretches. As many as were caught by the Romans in their sallies, Titus caused to be crucified in sight of the town, to inject a terror among the rest: but the zealots gave it out, that they were those who fled to him for protection; which when Titus understood, he sent a prisoner with his hands cut off to undeceive, and assure them, that he spared all that voluntarily came over to him; which encouraged great numbers to accept his offers, tho' the avenues were closely guarded by the factious, who put all to death who were caught going on that errand. A greater mischief than that was, that even those who escaped safe to the Roman camp were miserably butchered by the soldiers, from a notion which these had taken that they had swallowed great quantities of gold; inasmuch that two thousand of them were ripped up in one night, to come at their supposed treasure. When Titus was apprised of this barbarity, he would have condemned all those butchering wretches to death; but they proved so numerous, that he was forced to spare them, and contented himself with

Jews.

with sending a proclamation thro' his camp, that as many as should be suspected thenceforward of that horrid villany, should be put to immediate death; yet did not this deter many of them from it, only they did it more privately than before; so greedy were they of that bewitching metal. All this while the defection increased still more thro' the inhumanity of the faction within, who made the miseries and dying groans of their starving brethren the subject of their cruel mirth, and carried their barbarity even to the sheathing of their swords in sport in those poor wretches, under pretence of trying their sharpness.

When they found therefore that neither their guards nor severities could prevent the people's flight, they had recourse to another stratagem equally impious and cruel: which was, to hire a pack of vile pretenders to prophecy, to go about and encourage the despairing remains of the people to expect a speedy and miraculous deliverance; and this imposture proved a greater expedient with that infatuated nation than their other precautions.

42
Miserable
condition
of the Jews.

Nothing could be more dreadful than the famished condition to which they were now reduced. The poor, having nothing to trust to but the Roman's mercy or a speedy death, ran all hazards to get out of the city; and if in their flight, and wandering out for herbs or any other sustenance, they fell into the hands of any of Titus's parties sent about to guard the avenues, they were unmercifully scourged, and crucified if they made the least resistance. The rich within the walls were now forced, though in the most private manner, to give half, or all they were worth, for a measure of wheat, and the middling sort for one of barley. This they were forced to convey into some private place in their houses, and to feed upon it as it was, without daring to pound or grind it, much less to boil or bake it, lest the noise or smell should draw the rapacious zealots to come and tear it from them. Not that these were reduced to any real want of provisions, but they had a double end in this barbarous plunder; to wit, the starving what they cruelly styled all useless persons, and the keeping their own stores in reserve. It was upon this sad and pinching juncture, that an unhappy mother was reduced to the extremity of butchering and eating her own child.

43
A mother
eats her
own child.

When this news was spread through the city, the horror and consternation were as universal as they were inexpressible. It was then that they began to think themselves forsaken by the Divine Providence, and to expect the most terrible effects of his anger against the poor remains of their nation; insomuch that they began to envy those that had perished before them, and to wish their ruin might come before the sad expected catastrophe. Their fears were but too just; since Titus, at the very first hearing of this inhuman deed, swore the total extirpation of city and people. "Since (said he) they have so often refused my proffers of pardon, and have preferred war to peace, rebellion to obedience, and famine, such a dreadful one especially, to plenty, I am determined to bury that accursed metropolis under its ruins, that the sun may never shoot his beams on a city where the mothers feed on the flesh of their children, and the fathers, no less guilty than they, choose to drive them to such extremities, rather than lay down their arms."

44
Titus
swears the
total ruin
of the city.

Jews.

The dreadful action happened about the end of July, by which time the Romans, having pursued their attacks with fresh vigour, made themselves masters of the fortress Antonia; which obliged the Jews to set fire to those stately galleries which joined it to the temple, lest they should afford an easy passage to the besiegers into this last. About the same time Titus, with much difficulty, got materials for raising new mounds and terraces, in order to hasten the siege, and save, if possible, the sad remains of that once glorious structure; but his pity proved still worse and worse bestowed on those obstinate wretches, who only became the more furious and desperate by it. Titus at length caused fire to be set to the gates, after having had a very bloody encounter, in which his men were repulsed with loss. The Jews were so terrified at it, that they suffered themselves to be devoured by the flames, without attempting either to extinguish them or save themselves. All this while Josephus did not cease exhorting the infatuated people to surrender, to represent to them the dreadful consequences of an obstinate resistance, and to assure them that it was out of mere compassion to them that he thus hazarded his own life to save theirs: he received one day such a wound in his head by a stone from the battlements, as laid him for dead on the ground. The Jews sallied out immediately, to have seized on his body; but the Romans proved too quick and strong for them, and carried him off.

By this time the two factions within, but especially John ^{plundered the temple.} that of John, having plundered rich and poor of all they had, fell also on the treasury of the temple, whence John took a great quantity of golden utensils, together with those magnificent gifts which had been presented to that sacred place by the Jewish kings, by Augustus, Livia, and many other foreign princes, and melted them all to his own use. The repositories of the sacred oil which was to maintain the lamps, and of the wine which was reserved to accompany the usual sacrifices, were likewise seized upon, and turned into common use; and the last of this to such excess, as to make himself and his party drunk with it. All this while, not only the zealots, but many of the people, were still under such an insatiation, that tho' the fortress Antonia was lost, and nothing left but the temple, which the Romans were preparing to batter down, yet they could not persuade themselves, that God would suffer that holy place to be taken by heathens, and were still expecting some sudden and miraculous deliverance. Even that vile monster John, who commanded there, either seemed confident of it, or else endeavoured to make them think him so. For, when Josephus was sent for the last time to upbraid his obstinately exposing that sacred building, and the miserable remains of God's people, to sudden and sure destruction, he only answered him with the bitterest invectives; adding, that he was defending the Lord's vineyard, which he was sure could not be taken by any human force. Josephus in vain reminded him of the many ways by which he had polluted both city and temple; and in particular of the seas of blood which he caused to be shed in both those sacred places, and which, he assured him from the old prophecies, were a certain sign and forerunner of their speedy surrender and destruction. John remained as inflexible

Jews. as if all the prophets had assured him of a deliverance; till at length Titus, foreseeing the inevitable ruin of that stately edifice, which he was still extremely desirous to save, vouchsafed even himself to speak to them, and to persuade them to surrender. But the factious, looking upon this condensation as the effects of his fear rather than generosity, only grew the more furious upon it, and forced him at last to come to those extremities, which he had hitherto endeavoured to avoid. That his army, which was to attack the temple, might have the freer passage towards it thro' the castle Antonia, he caused a considerable part of the wall to be pulled down, and levelled; which proved so very strong, that it took him up seven whole days, by which time they were far advanced in the month of July.

46
The daily
sacrifice in-
terrupted.

It was on the 17th day of that month, as all Josephus's copies have it, that the daily sacrifice ceased for the first time since its restoration by the brave Judas Maccabeus, there being no proper person left in the temple to offer it up. Titus caused the factious to be severely upbraided for it; exhorted John to set up whom he would to perform that office, rather than suffer the service of God to be set aside; and then challenged him and his party to come out of the temple, and fight on a more proper ground, and thereby save that sacred edifice from the fury of the Roman troops. When nothing could prevail on them, they began to set fire again to the gallery which yielded a communication between the temple and the castle Antonia. The Jews had already burnt about 20 cubits of it in length; but this second blaze, which was likewise encouraged by the besieged, consumed about 14 more; after which, they beat down what remained standing. On the 27th of July, the Jews, having filled part of the western portico with combustible matter, made a kind of flight; upon which, some of the forwardest of the Romans having scaled up to the top, the Jews set fire to it, which flamed with such sudden fury, that many of the former were consumed in it, and the rest, venturing to jump down from the battlements, were, all but one, crushed to death.

On the very next day, Titus having set fire to the north gallery, which inclosed the outer court of the temple, from fort Antonia to the valley of Cedron, got an easy admittance into it, and forced the besieged into that of the priests. He tried in vain six days to batter down one of the galleries of that precinct with an helepolis: he was forced to mount his battering-rams on the terrace, which was raised by this time; and yet the strength of this wall was such, that it eluded the force of these also, tho' others of his troops were busy in fapping it. When they found that neither rams nor fapping could gain ground, they bethought themselves of scaling; but were vigorously repulsed in the attempt, with the loss of some standards, and a number of men. When Titus therefore found that his desire of saving that building was like to cost so many lives, he set fire to the gates, which, being plated with silver, burnt all that night, whilst the metal dropt down in the melting. The flame soon communicated itself to the porticoes and galleries; which the besieged beheld without offering to stop it, but contented themselves with sending whole volleys of impotent curses against the Romans. This was done on the eighth of

47
The gates
of the
temple set
on fire.

August; and, on the next day, Titus, having given orders to extinguish the fire, called a council, to determine whether the remainder of the temple should be saved or demolished. That general was still for the former, and most of the rest declared for the latter; alleging, that it was no longer a temple, but a scene of war and slaughter, and that the Jews would never be at rest as long as any part of it was left standing: but when they found Titus stiffly bent on preserving so noble an edifice, against which he told them he could have no quarrel, they all came over to his mind. The next day, August the 10th, was therefore determined for a general assault: and the night before the Jews made two desperate sallies on the Romans; in the last of which, these, being timely succoured by Titus, beat them back into their inclosure.

But whether this last Jewish effort exasperated the besiegers, or, which is more likely, as Josephus thinks, pushed by the hand of Providence, one of the Roman soldiers, of his own accord, took up a blazing firebrand, and, getting on his comrade's shoulders, threw it into one of the apartments that surrounded the sanctuary, through a window. This immediately set the whole north-side in a flame up to the third story, on the same fatal day and month in which it had been formerly burnt by Nebuchadnezzar. Titus, who was gone to rest himself a while in his pavilion, was awaked at the noise, and ran immediately to give orders to have the fire extinguished. He called, prayed, threatened, and even caned his men, but in vain; the confusion was so great, and the soldiers so obstinately bent upon destroying all that was left, that he was neither heard nor minded. Those that flocked thither from the camp, instead of obeying his orders, were busy, either in killing the Jews, or in increasing the flames. When Titus observed that all his endeavours were vain, he entered into the sanctuary and the most holy place, in which he found still such sumptuous utensils and other riches as even exceeded all that had been told him of it. Out of the former he saved the golden candlestick, the table of shew-bread, the altar of perfumes, all of pure gold, and the book or volume of the law, wrapped up in a rich gold tissue: but in the latter he found no utensils, because, in all probability, they had not made a fresh ark since that of Solomon had been lost. Upon his coming out of that sacred place, some other soldiers set fire to it, and obliged those that had staid behind to come out; they all fell foul on the plunder of it, tearing even the gold plating off the gates and timber-work, and carried off all the costly utensils, robes, &c. they found, inasmuch that there was not one of them who did not enrich himself by it.

48
A dreadful
massacre.
An horrid massacre followed soon after, in which great many thousands perished; some by the flames, others by the fall from the battlements, and a greater number by the enemy's sword, which destroyed all it met with, without distinction of age, sex, or quality. Among them were upwards of 6000 persons who had been seduced thither by a false prophet, who promised them that they should find a speedy and miraculous relief there on that very day. Some of them remained five whole days on the top of the walls, and afterwards threw themselves on the general's

Jews.

ral's mercy; but were answered that they had outstaid the time, and were led to execution. The Romans carried their fury to the burning of all the treasure-houses of the place, tho' they were full of the richest furniture, plate, vestments, and other things of value, which had been laid up in those places for security. In a word, they did not cease burning and butchering, till they had destroyed all, except two of the temple-gates, and that part of the court which was destined for the women.

In the mean time the seditious made such a vigorous push, that they escaped the fury of the Romans, at least for the present, and retired into the city. But here they found all the avenues so well guarded, that there was no possibility left for them to get out; which obliged them to secure themselves as well as they could on the south-side of it, from whence Simon, and John of Gischala, sent to desire a parley with Titus. They were answered, that though they had been the cause of all this bloodshed and ruin, yet they should have their lives spared, if they laid down their arms, and surrendered themselves prisoners. To this they replied, that they had engaged themselves, by the most solemn oaths, never to surrender; and therefore, only begged leave to retire into the mountains with their wives and children: which insolence so exasperated the Roman general, that he caused an herald to bid them stand to their defence; for that not one of them should be spared, since they had rejected his last offers of pardon. Immediately after this, he abandoned the city to the fury of the soldiers, who fell forthwith on plundering, setting fire every where, and murdering all that fell into their hands; whilst the factious, who were left, went and fortified themselves in the royal palace, where they killed 8000 Jews who had taken refuge there.

In the mean time, great preparations were making for a vigorous attack on the upper city, especially on the royal palace; and this took them up from the 20th of August to the 7th of September, during which time great numbers came and made their submission to Titus. The warlike engines then played so furiously on the factious, that they were taken with a sudden panic; and, instead of fleeing into the towers of Hippicos, Phasaël, or Mariamne, which were yet untaken, and so strong that nothing but famine could have reduced them, they ran like madmen towards Siloah, with a design to have attacked the wall of circumvallation, and to have escaped out of the city; but, being there repulsed, they were forced to go and hide themselves in the public finks and common sewers, some one way and some another. All whom the Romans could find were put to the sword, and the city was set on fire. This was on the eighth of September, when the city was taken and entered by Titus. He would have put an end to the massacre; but his men killed all, except the most vigorous, whom they shut up in the porch of the women just mentioned. Fronto, who had the care of them, reserved the youngest and most beautiful for Titus's triumph; and sent all that were above seventeen years of age into Egypt, to be employed in some public works there; and a great number of others were sent into several cities of Syria, and other provinces, to be exposed on the public theatre, to exhibit fights, or be devour-

N^o 164.

ed by wild beasts. The number of those prisoners amounted to 97,000, besides about 11,000 more, who were either starved through neglect, or starved themselves through fullness and despair.—The whole number of Jews who perished in this war is computed at upwards of 1,400,000.

Besides these, however, a vast number perished in caves, woods, wildernesses, common-sewers, &c. of whom no computation could be made. Whilst the soldiers were still busy in burning the remains of the city, and visiting all the hiding-places, where they killed numbers of poor creatures who had endeavoured to evade their cruelty, the two grand rebels Simon and John were found, and reserved for the triumph of the conqueror. John, being pinched with hunger, soon came out; and having begged his life, obtained it; but was condemned to perpetual imprisonment. Simon, whose retreat had been better stored, held out till the end of October. The two chiefs, with 700 of the handsomest Jewish captives, were made to attend the triumphal chariot; after which Simon was dragged through the streets with a rope about his neck, severely scourged, and then put to death; and John was sent into perpetual imprisonment.—Three castles still remained untaken, namely, Herodion, Machæron, and Massada. The two former capitulated; but Massada held out. The place was exceedingly strong both by nature and art, well stored with all kinds of provisions, and defended by a numerous garrison of zealots, at the head of whom was one Eleazar, the grandson of Judas Gaulonites; formerly mentioned. The Roman general having in vain tried his engines and battering-rams against it, bethought himself of surrounding it with a high and strong wall, and then ordered the gates to be set on fire. The wind pushed the flames so fiercely against the Jews, that Eleazar in despair persuaded them first to kill their wives and children, and then to choose ten men by lot, who should kill all the rest; and lastly one out of the surviving ten to dispatch them and himself; only this last man was ordered to set fire to the place before he put an end to his own life. All this was accordingly done; and on the morrow, when the Romans were preparing to scale the walls, they were greatly surprised neither to see nor hear any thing move. On this they made such an hideous outcry, that two women, who had concealed themselves in an aqueduct, came forth and acquainted them with the desperate catastrophe of the besieged.

Thus ended the Jewish nation and worship; nor have they ever since been able to regain the smallest footing in the country of Judea, nor indeed in any other country on earth, though there is scarce any part of the globe where they are not to be found. They continue their vain expectations of a Messiah to deliver them from the low estate into which they are fallen; and, notwithstanding their repeated disappointments, there are few who can ever be persuaded to embrace Christianity. Their ceremonies and religious worship ought to be taken from the law of Moses; but they have added a multitude of absurdities not worth the inquiring after. In many countries, and in different ages, they have been terribly massacred, and in general have been better treated by the Mahometans and Pagans than by Christians. Since the rev-

⁴⁹ Simon and John taken.

⁵⁰ Desperate end of the garrison of Massada.

⁵¹ State of the Jews since the destruction of their city.

Jews,
Jezides

val of arts and learning, however, they have felt the benefit of that increase of humanity which hath taken place almost all over the globe. It is said, that in this country the life of a Jew was formerly at the disposal of the chief lord where he lived, and likewise all his goods. So strong also were popular prejudices and suspicions against them, that in the year 1348, a fatal endemic distemper raging in a great part of Europe, it was said that they had poisoned the springs and wells; in consequence of which a million and a half of them were cruelly massacred. In 1492, half a million of them were driven out of Spain, and 150,000 from Portugal. Edward I. did the same. In short, they were every where persecuted, oppressed, and most rigorously treated.

In this enlightened period a more generous system is taking place. France has allowed them the rights of citizens, which induces numbers of the most wealthy Jews to fix their residence in that country. Poland is about granting them very great privileges and immunities; England, Holland, and Prussia tolerate and protect them; and the emperor has revoked some restrictions, for which an edict has lately passed: Spain, Portugal, and some of the Italian states, are still, however, totally averse to their dwelling among them.

JEZIDES, among the Mahometans; a term of similar import with heretics among Christians.

The Jezides are a numerous sect inhabiting Turkey and Persia, so called from their head Jezid, an Arabian prince, who slew the sons of Ali, Mahomet's father-in-law; for which reason he is reckoned a parricide, and his followers heretics. There are about 20,000 Jezides in Turkey and Persia; who are of two sorts, black and white. The white are clad like Turks; and distinguished only by their shirts, which are not slit at the neck like those of others, but have only a round hole to thrust their heads through. This is in memory of a golden ring, or circle of light, which descended from heaven upon the neck of their chief, the head of their religion, after his undergoing a fast of forty days. The black Jezides, though married, are the monks or religious of the order; and these are called *Fakirs*.

The Turks exact excessive taxes from the Jezides, who hate the Turks as their mortal enemies; and when, in their wrath, they curse any creature, they call it *musulman*: but they are great lovers of the Christians, being more fond of Jesus Christ than of Mahomet, and are never circumcised but when they are forced to it. They are extremely ignorant, and believe both the bible and the koran without reading either of them: they make vows and pilgrimages, but have no places of religious worship.

All the adoration they pay to God consists of some songs in honour of Jesus Christ, the virgin, Moses, and sometimes Mahomet; and it is a principal point of their religion never to speak ill of the devil, lest he should resent the injury, if ever he should come to be in favour with God again, which they think possible; whenever they speak of him, they call him the *angel Peacock*. They bury their dead in the first place they come at, rejoicing as at a festival, and celebrating the entry of the deceased into heaven. They go in companies like the Arabians, and change their habitations

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every 15 days. When they get wine, they drink it to excess; and it is said, that they sometimes do this with a religious purpose, calling it the blood of Christ. They buy their wives; and the market-price is 200 crowns for all women, handsome or not, without distinction.

JEZRAEL, or JEZREEL, a town in the north of Samaria, towards mount Carmel, where stood a palace of the kings of Israel, 1 Kings xxi. 18. On the borders of Galilee (Joshua xix.) said to be one of the towns of Issachar.—The valley of Jezreel (Judges vi. 17.) was situated to the north of the town, running from west to east for ten miles, between two mountains; the one to the north, commonly called *Hermon*, near mount Tabor; the other *Gilboa*: in breadth two miles.

IF, an island of France, in Provence, and the most eastern of the three before the harbour of Marseilles. It is very well fortified, and its port one of the best in the Mediterranean.

IGIS, a town of the country of the Grisons, in Caddeia, with a magnificent castle, in which is a cabinet of curiosities, and a handsome library; 23 miles south-west of Choira, and 23 south of Glaris. E. Lon. 9. 0. N. Lat. 49. 10.

IGLAW, a considerable and populous town of Germany, in Moravia, where they have a manufactory of good cloth, and excellent beer. It is seated on the river Igl, 40 miles west of Brin, and 80 south-east of Prague. E. Long. 15. 5. N. Lat. 49. 10.

IGNATIA, in botany, a genus of the monogymia order, belonging to the pentandria class of plants. The calyx is five-toothed; the corolla is long; the fruit an unilocular plum, with many seeds. There is but one species, the amara, a native of India. The fruit of this tree contains the seeds called *St Ignatius's beans*.

The best account of the plant that has yet appeared, is that sent by father Camelli to Ray and Petiver, and published in the Philosophical Transactions for the year 1699: he observes, that it grows in the Philippine islands, and winds itself about the tallest trees to the top; that it has large, ribbed, bitter leaves, a flower like that of the pomegranate, and a fruit larger than a melon. Some resemble the fruit to a pomegranate, probably from misapplying Camelli's words. The fruit is covered with a thin, glossy, blackish, green, and as it were marbled shell, under which is lodged another of a stony hardness: within this is contained a soft, yellow, bitterish pulp, in which lie the seeds or beans, to the number commonly of 24, each covered with a silvery down.

The same gentleman gives an account of the virtues attributed to these seeds by the Indians; but experience has shown that they are dangerous. Konig relates, that a person, by drinking some of a spirituous tincture of them instead of aqua vitæ, was thrown into strong convulsions; and Dr Grim, that a dram of the seed in substance occasioned, for a time, a total deprivation of the senses. Others mention violent vomitings and purgings from its use. Neumann hath observed intermitting fevers removed by drinking, on the approach of a paroxysm, an infusion of some grains of the bean made in carduus water: We are not, however, from hence to look upon this medicine as an universal febrifuge, or to use it indiscriminately.

T

These

Jezrael
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Ignatia.

Ignatius.

These beans (for so custom requires that we should call them) are about the size of a moderately large nutmeg; in figure somewhat roundish, but extremely irregular, scarcely any two being entirely alike, full of unequal depressions and prominences; in colour, externally yellowish brown, but when the outer skin is taken off, of a blackish brown, and in part quite blackish; in consistence hard and compact as horn, so as not to be reducible into a powdery form, but by cutting or rasping: for all their hardness, however, they are not proof against worms. When fresh, they have somewhat of a musky smell, which by age is lost: their taste is very bitter, resembled by some to that of centaury.

According to some, it is from this plant that the COLUMBO root is obtained.

IGNATIUS LOYOLA, (canonized), the founder of the well-known order of the JESUITS, was born at the castle of Loyola, in Biscay, 1491; and became first page to Ferdinand V. king of Spain, and then an officer in his army. In this last capacity, he signalized himself by his valour; and was wounded in both legs at the siege of Pampeluna, in 1521. To this circumstance the Jesuits owe their origin; for, while he was under cure of his wound, a *Life of the Saints* was put into his hands, which determined him to forsake the military for the ecclesiastical profession. His first devout exercise was to dedicate himself to the blessed virgin as her knight: he then went a pilgrimage to the Holy Land; and on his return to Europe, he continued his theological studies in the universities of Spain, though he was then 33 years of age. After this he went to Paris; and in France laid the foundation of this new order, the institutes of which he presented to Pope Paul III. who made many objections to them, but at last confirmed the institution in 1540. The founder died in 1555, and left his disciples two famous books; 1. *Spiritual exercises*; 2. *Constitutions or rules of the order*. But it must be remembered, that though these avowed institutes contain many privileges obnoxious to the welfare of society, the most diabolical are contained in the private rules intitled *Monita secreta*, which were not discovered till towards the close of the last century; and most writers attribute these, and even the *Constitutions*, to Laynez, the second general of the order.

IGNATIUS (St), surnamed *Theophrastus*, one of the apostolical fathers of the church, was born in Syria, and educated under the apostle and evangelist St John, and intimately acquainted with some other of the apostles, especially St Peter and St Paul. Being fully instructed in the doctrines of Christianity, he was, for his eminent parts and piety, ordained by St John, and confirmed about the year 67 bishop of Antioch, by those two apostles, who first planted Christianity in that city, where the disciples also were first called *Christians*. Antioch was then not only the metropolis of Syria, but a city the most famous and renowned of any in the east, and the ancient seat of the Roman emperors, as well as of the viceroys and governors. In this important seat he continued to sit somewhat above 40 years, both an honour, and safe-guard of the Christian religion, till the year 107, when Trajan the emperor, flushed with a victory which he had lately obtained over the Scythians and Daci, about the ninth year of his reign, came to Antioch to make preparations for

a war against the Parthians and Armenians. He entered the city with the pomp and solemnities of a triumph; and, as his first care usually was about the concerns of religion, he began presently to inquire into that affair. Christianity had by this time made such a progress, that the Romans grew jealous and uneasy at it. This prince, therefore, had already commenced a persecution against the Christians in other parts of the empire, which he now resolved to carry on here. However, as he was naturally of a mild disposition, though he ordered the laws to be put in force against them if convicted, yet he forbade them to be sought after.

In this state of affairs, Ignatius, thinking it more prudent to go himself than stay to be sent for, of his own accord presented himself to the emperor; and, it is said, there passed a long and particular discourse between them, wherein the emperor expressing a surprise how he dared to transgress the laws, the bishop took the opportunity to assert his own innocence, and to explain and vindicate his faith with freedom. The issue of this was, that he was cast into prison, and this sentence passed upon him, That, being incurably overrun with superstition, he should be carried bound by soldiers to Rome, and there thrown as a prey to wild beasts.

He was first conducted to Seleucia, a port of Syria, at about 16 miles distance, the place where Paul and Barnabas set sail for Cyprus. Arriving at Smyrna in Ionia, he went to visit Polycarp bishop of that place, and was himself visited by the clergy of the Asian churches round the country. In return for that kindness, he wrote letters to several churches, as the Ephesians, Magnesians, and Trallians, besides the Romans, for their instruction and establishment in the faith; one of these was addressed to the Christians at Rome, to acquaint them with his present state, and passionate desire not to be hindered in the course of martyrdom which he was now hastening to accomplish.

His guard, a little impatient of their stay, set sail with him for Troas, a noted city of the lesser Phrygia, not far from the ruins of old Troy; where, at his arrival, he was much refreshed with the news he received of the persecution ceasing in the church of Antioch: hither also several churches sent their messengers to pay their respects to him; and hence too he dispatched two epistles, one to the church of Philadelphia, and the other to that of Smyrna; and, together with this last, as Eusebius relates, he wrote privately to Polycarp, recommending to him the care and inspection of the church of Antioch.

From Troas they sailed to Neapolis, a maritime town in Macedonia; thence to Philippi, a Roman colony, where they were entertained with all imaginable kindness and courtesy, and conducted forwards on their journey, passing on foot through Macedonia and Epirus, till they came to Epidaurium, a city of Dalmatia; where again taking shipping, they sailed through the Adriatic, and arrived at Rhegium, a port-town in Italy; directing their course thence through the Tyrrhenian sea to Puteoli, whence Ignatius desired to proceed by land, ambitious to trace the same way by which St Paul went to Rome: but this wish was not complied with; and, after a stay of 24 hours, a prosperous wind quickly carried them to the Roman port, the great harbour and station for their navy, built near Ostia, at the mouth of the Tyber, about 16 miles from

Ignatius
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Ignis.

from Rome; whither the martyr longed to come, as much desirous to be at the end of his race, as his keepers, weary of their voyage, were to be at the end of their journey.

The Christians at Rome, daily expecting his arrival, were come out to meet and entertain him, and accordingly received him with a mixture of joy and sorrow; but when some of them intimated, that possibly the populace might be taken off from desiring his death, he expressed a pious indignation, intreating them to cast no rubs in his way, nor do any thing that might hinder him, now he was hastening to his crown. There are many such expressions as this in his epistle to the Romans, which plainly show that he was highly ambitious of the crown of martyrdom. Yet it does not appear that he rashly sought or provoked danger. Among other expressions of his ardor for suffering, he said, that the wild beasts had feared and refused to touch some that had been thrown to them, which he hoped would not happen to him. Being conducted to Rome, he was presented to the præfect, and the emperor's letters probably delivered concerning him. The interval before his martyrdom was spent in prayers for the peace and prosperity of the church. That his punishment might be the more pompous and public, one of their solemn festivals, the time of their Saturnalia, and that part of it when they celebrated their Sigillaria, was pitched on for his execution; at which time it was their custom to entertain the people with the bloody conflicts of gladiators, and the hunting and fighting with wild beasts. Accordingly, on the 13th kal. January, i. e. December 20. he was brought out into the amphitheatre, and the lions being let loose upon him, quickly dispatched their meal, leaving nothing but a few of the hardest of his bones. These remains were gathered up by two deacons who had been the companions of his journey; and being transported to Antioch, were interred in the cemetery, without the gate that leads to Daphne; whence, by the command of the emperor Theodosius, they were removed with great pomp and solemnity to the Tycheon, a temple within the city, dedicated to the public genius of it, but now consecrated to the memory of the martyr.

St Ignatius stands at the head of those Antinician fathers, who have occasionally delivered their opinions in defence of the true divinity of Christ, whom he calls the *Son of God, and his eternal Word*. He is also reckoned the great champion of the doctrine of the episcopal order, as distinct and superior to that of priest and deacon. And one, the most important, use of his writings respects the authenticity of the holy Scriptures, which he frequently alludes to, in the very expressions as they stand at this day.—Archbishop Usher's edition of his works, printed in 1647, is thought the best: yet there is a fresher edition extant at Amsterdam, where, beside the best notes, there are the dissertations of Usher and Pearson.

St IGNATIUS's Bean. See IGNATIA.

IGNIS-FATUUS, a kind of light, supposed to be of an electric nature, appearing frequently in mines, marshy places, and near stagnating waters. It was formerly thought, and is still by the superstitious believed, to have something ominous in its nature,

and to preface death and other misfortunes. There have been instances of people being decoyed by these lights into marshy places, where they have perished; whence the names of *Ignis-fatuus*, *Will-with-a-wisp*, and *Jack-with-a-lantern*, as if this appearance was an evil spirit which took delight in doing mischief of that kind. For a further account of the nature and properties of the ignis-fatuus, see the articles LIGHT and METEOR.

Ignition
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Ignorance.

IGNITION, properly signifies the setting fire to any substance; but the sense is commonly restrained to that kind of burning which is not accompanied with flame, such as that of charcoal, cinders, metals, stones, and other solid substances.

The effects of ignition are first to dissipate what is called the *phlogiston* of the ignited substance, after which it is reduced to ashes. Vitrification next follows; and lastly, the substance is totally dissipated in vapour. All these effects, however, depend on the presence of the air; for in *vacuo* the phlogiston of any substance cannot be dissipated. Neither can a body which is totally destitute of phlogiston be ignited in such a manner as those which are not deprived of it: for as long as the phlogiston remains, the heat is kept up in the body by the action of the external air upon it; but when the phlogiston is totally gone, the air always destroys, instead of augmenting, the heat. Philosophers have therefore been greatly embarrassed in explaining the phenomena of ignition. See PHLOGISTON.

IGNOBILES, amongst the Romans, was the designation of such persons as had no right of using pictures and statues. See *Jus Imaginis*.

IGNOMINIA, a species of punishment amongst the Romans, whereby the offender suffered public shame, either by virtue of the prætor's edict, or by order of the censor. This punishment, besides the scandal, deprived the party of the privilege of bearing any offices, and almost all other liberties of a Roman citizen.

IGNORAMUS, in law is a word properly used by the grand inquest empanelled in the inquisition of causes criminal and public, and written upon the bill whereby any crime is offered to their consideration, when as they dislike their evidence as defective or too weak to make good the presentment; the effect of which word so written is, that all farther inquiry upon that party for that fault is thereby stopped, and he delivered without farther answer. It hath a resemblance with that custom of the ancient Romans, where the judges, when they absolved a person accused, did write *A.* upon a little table provided for that purpose, i. e. *absolvimus*; if they judged him guilty, they wrote *C. i. e. condemnamus*; if they found the cause difficult and doubtful, they wrote *N. L. i. e. non liquet*.

IGNORANCE, the privation or absence of knowledge. The causes of ignorance, according to Locke, are chiefly these three. 1. Want of ideas. 2. Want of a discoverable connection between the ideas we have. 3. Want of tracing and examining our ideas. See METAPHYSICS.

IGNORANCE, in a more particular sense, is used to denote illiteracy. Previous to the taking of Rome by the Gauls, such gross ignorance prevailed among the Romans, that few of the citizens could read or write, and

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Ignorance the alphabet was almost unknown. During three ages there were no public schools, but the little learning their children had was taught them by their parents; and how little that was may be partly concluded from this circumstance, that a nail was usually driven into the wall of the temple of *Jupiter Capitolinus*, on the 15th of September, to assist the ignorance of the people in reckoning the years, because they were unacquainted with letters or figures. The driving of the nail was afterwards converted into a religious ceremony, and performed by the *Dictator*, to avert public calamities.

IGNORANCE, or mistake, in law, a defect of will, whereby a person is excused from the guilt of a crime, when, intending to do a lawful act, he does that which is unlawful. For here the deed and the will acting separately, there is not that conjunction between them which is necessary to form a criminal act. But this must be an ignorance or mistake of fact, and not an error in point of law. As if a man intending to kill a thief or house-breaker in his own house, by mistake kills one of his own family, this is no criminal action: but if a man thinks he has a right to kill a person excommunicated or outlawed wherever he meets him, and does so; this is wilful murder. For a mistake in point of law, which every person of discretion not only may, but is bound and presumed to know, is, in criminal cases, no sort of defence. *Ignorantia juris quod quisque tenetur scire, neminem excusat*, is as well the maxim of our own law as it was of the Roman.

IGUANA, in zoology, a species of *LACERTA*.

Mud. IGUANA. See *MURAENA*.

IHOR, **JOHOR**, or *Jor*, a town of Asia, in Malacca, and capital of a province of the same name in the peninsula beyond the Ganges. It was taken by the Portuguese in 1603, who destroyed it, and carried off the cannon; but it has since been rebuilt, and is now in possession of the Dutch. E. Long. 93. 55. N. Lat. 1. 15.

JIB, the foremost sail of a ship, being a large stay-sail extended from the outer end of the bowsprit prolonged by the jib-boom, towards the fore-top-mast-head. See *SAIL*.

The jib is a sail of great command with any side-wind, but especially when the ship is *close hauled*, or has the wind upon her beam; and its effort in *casting* the ship, or turning her head to leeward, is very powerful, and of great utility, particularly when the ship is working through a narrow channel.

Jib-Boom, a boom run out from the extremity of the bowsprit, parallel to its length, and serving to extend the bottom of the jib, and the stay of the fore-top-gallant mast. This boom, which is nothing more than a continuation of the bowsprit forward, to which it may be considered as a top mast, is usually attached to the bowsprit by means of two large boom-irons, or by one boom iron, and a cap on the outer end of the bowsprit; or, finally, by the cap without and a strong lashing within, instead of a boom-iron, which is generally the method of securing it in small merchant-ships. It may therefore be drawn in upon the bowsprit as occasion requires; which is usually practised when the ship enters a harbour, where it might very soon be broken or carried away, by the vessels which are moored therein, or passing by under sail.

JIBBEL-AUREZ, the moss auratus of the middle

age, an assemblage of many very rocky mountains in Africa, in the kingdom of Algiers. Here Mr Bruce met with a race of people much fairer in the complexion than any of the nations to the southward of Britain: their hair was red, and their eyes blue: they maintain their independence, and are of a savage disposition, so that our traveller found it difficult to approach them with safety. They are called *Neardia*; and each of them has a Greek cross in the middle between the eyes, marked with antimony. They are divided into tribes, but, unlike the other Arabs, have huts in the mountains built of mud and straw; and are, by our author, supposed to be a remnant of the Vandals. He even thinks that they may be descended from the remainder of an army of Vandals mentioned by Procopius, which was defeated among these mountains. They live in perpetual war with the Moors, and boast that their ancestors were Christians. They pay no taxes.

JIDDA, a town of Arabia, situated, according to Mr Bruce, in N. Lat. 28° 0' 1' E. Long. 39° 16' 45". It is situated in a very unwholesome, barren, and desert part of the country. Immediately without the gate to the eastward is a desert plain filled with the huts of the Bedoween or country Arabs, built of long bundles of spartum or bent-grass put together like fascines. These people supply the town with milk and butter. "There is no stirring out of the town (says Mr Bruce) even for a walk, unless for about half a mile in the south-side by the sea, where there is a number of stinking pools of stagnant water, which contributes to make the town very unwholesome."

From the disagreeable and inconvenient situation of this port, it is probable, that it would have been long ago abandoned, had it not been for its vicinity to Mecca, and the vast annual influx of wealth occasioned by the India trade; which, however, does not continue, but passes on to Mecca, whence it is dispersed all over the east. The town of Jidda itself receives but little advantage, for all the customs are immediately sent to the needy and rapacious sheriff of Mecca and his dependents. "The gold (says Mr Bruce) is returned in bags and boxes, and passes on as rapidly to the ships as the goods do to the market, and leaves as little profit behind. In the mean time provisions rise to a prodigious price, and this falls upon the townsmen, while all the profit of the traffic is in the hands of strangers; most of whom, after the market is over (which does not last six weeks), retire to Yemen and other neighbouring countries, which abound in every sort of provision.

From this scarcity, Mr Bruce supposes it is that polygamy is less common here than in any other part of Arabia. "Few of the inhabitants of Jidda (says our author) can avail themselves of the privilege granted by Mahomet. He cannot marry more than one wife, because he cannot maintain more; and from this cause arises the want of people and the number of unmarried women."

The trade at Jidda is carried on in a manner which appeared very strange to our traveller. "Nine ships (says he) were there from India; some of them worth, I suppose, 200,000l. One merchant, a Turk, living at Mecca, 30 hours journey off, where no Christian dares go whilst the continent is open to the Turk for escape,

Jidda. escape, offers to purchase the cargoes of four out of these nine ships himself; another of the same cast comes and says he will buy none unless he has them all. The samples are shown, and the cargoes of the whole nine ships are carried into the wildest parts of Arabia by men with whom one would not wish to trust himself alone in the field. This is not all; two India brokers come into the room to settle the price; one on the part of the India Captain, the other on that of the buyer the Turk. They are neither Mahometans nor Christians, but have credit with both. They sit down on the carpet, and take an India shawl which they carry on their shoulder like a napkin, and spread it over their hands. They talk in the mean time indifferent conversation, as if they were employed in no serious business whatever. After about 20 minutes spent in handling each others fingers below the shawl, the bargain is concluded, say for nine ships, without one word ever having been spoken on the subject, or pen or ink used in any shape whatever. There never was one instance of a dispute happening in these sales. But this is not all; the money is yet to be paid. A private Moor, who has nothing to support him but his character, becomes responsible for the payment of these cargoes. This man delivers a number of coarse hempen bags full of what is supposed to be money. He marks the contents upon the bag, and puts his seal upon the string that ties the mouth of it. This is received for what is marked upon it without any one ever having opened one of the bags; and in India it is current for the value marked upon it as long as the bag lasts.

The port of Jidda is very extensive, and contains numberless shoals, small islands, and sunk rocks, with deep channels, however, between them; but in the harbour itself ships may ride secure, whatever wind blows. The only danger is in the coming in or going out; but as the pilots are very skilful, accidents are never known to happen. The charts of this harbour, as Mr Bruce informs us, are exceedingly erroneous. While he staid here, he was desired by Captain Thornhill to make a new chart of the harbour; but finding that it had been undertaken by another gentleman, Captain Newland, he dropped it. He argues in the strongest terms against the old maps, which he says can be of no use, but the contrary; and he gives it as a characteristic of the Red sea, "scarce to have soundings in any part of the channel, and often on both sides; whilst ashore, soundings are hardly found a boat length from the main. To this, says he, I will add, that there is scarce one island on which I ever was, where the boltspit was not over the land, while there were no soundings by a line heaved over the stern. Of all the vessels in Jidda, only two had their log-lines properly divided, and yet all were so fond of their supposed accuracy, as to aver they had kept their course within five leagues between India and Babelmandel. Yet they had made no estimation of the currents without the straits, nor the different very strong ones soon after passing Socotra; their half-minute glasses, upon a medium, ran 57 seconds; they had made no observations on the tides or currents in the Red sea, either in the channel or in the inward passage; yet there is delineated in this map a course of

Captain Newland's, which he kept in the middle of the channel, full of sharp angles and short stretches; you would think every yard was measured and sounded!"

JIG. See MUSIC, n° 252.

JIN. See GENII.

IKENILD STREET, one of the four famous ways which the Romans made in England, called *Stratum Icenorum*, because it began in the country of the *Iceni*, who inhabited Norfolk, Suffolk, and Cambridge-shire.

ILA, ILAY, or *Isla*, one of the Western Isles of Scotland, lying to the west of Jura, from which it is separated by a narrow channel. It extends 28 miles in length from north to south, and is 18 in breadth from east to west. On the east side, it is full of mountains covered with heath; to the southward, the land is tolerably well cultivated. In some parts the inhabitants have found great plenty of limestone, and lead-mines are worked in three different places. The only harbour in Isla is at Lochdale, near the north end of the island. Here are several rivers and lakes well stored with trout, eels, and salmon. In the centre is Loch Finlagan, about three miles in circuit, with the little isle of that name in the middle. Here the great lord of the isles once resided in all the pomp of royalty; but his palaces and offices are now in ruins. Instead of a throne, Macdonald stood on a stone seven feet square, in which there was an impression made to receive his feet; here he was crowned and anointed by the bishop of Argyle and seven inferior priests, in presence of the chieftains. This stone still exists. The ceremony (after the new lord had collected his kindred and vassals) was truly patriarchal. After putting on his armour, his helmet, and his sword, he took an oath to rule as his ancestors had done; that is, to govern as a father would his children: his people in return swore that they would pay the same obedience to him as children would to their parent. The dominions of this potentate, about the year 1586, consisted only of Ilay, Jura, Knapdale, and Cantyre: so reduced were they from what they had been before the deprivation of the great earl of Ross in the reign of James III. Near this is another little isle, where he assembled his council, *Ilanna Corile*, or "the island of council;" where 13 judges constantly sat to decide differences among his subjects; and received for their trouble the 11th part of the value of the affair tried before them. In the first island were buried the wives and children of the lords of the isles; but their own persons were deposited in the more sacred ground of Iona. On the shores of the lake are some marks of the quarters of his *Carnauch* and *Gilli-glasses*, "the military of the isles;" the first signifying a strong man, the last a grim-looking fellow. The first were light-armed, and fought with darts and daggers; the last with sharp hatchets. These are the troops that Shakespeare alludes to, when he speaks of a Donald, who

From the Western Isles
Of Kernes and Gallow-glasses was supplied.

Besides those already mentioned, the lords had a house and chapel at Laganon, on the south side of Loch-an-daal: a strong castle on a rock in the sea, at Dunowalk, at the south-east end of the country; for they

Jig
ILA.

Ila.

made this island their residence after their expulsion from that of Man in 1304.—There is a tradition, that while the Isle of Man was part of the kingdom of the isles, the rents were for a time paid in this country: those in silver were paid on a rock, still called *Craig-a-nione*, or “the rock of the silver-rent;” the other, *Craig-a-naingih*, or “the rock of rents in kind.” These lie opposite to each other, at the mouth of a harbour on the south side of this island. There are several forts built on the isles in fresh-water lakes, and divers caverns in different parts of the island, which have been used occasionally as places of strength. The island is divided into four parishes, *viz.* Kildalton, Kilaron, Kilchoman, and Kilmenie. The produce is corn of different kinds; such as bear, which sometimes yields eleven fold; and oats six fold. Much flax is raised here, and about L. 2000 worth sold out of the island in yarn, which might better be manufactured on the spot, to give employ to the poor natives. Notwithstanding the excellency of the land, above L. 1000 worth of meal is annually imported. Ale is frequently made in this island of the young tops of heath, mixing two-thirds of that plant with one of malt, sometimes adding hops. Boethius relates, that this liquor was much used among the Picts; but when that nation was extirpated by the Scots, the secret of making it perished with them. Numbers of cattle are bred here, and about 1700 are annually exported at the price of 50 shillings each. The island is often overstocked, and numbers die in March for want of fodder. None but milch-cows are housed: cattle of all other kinds, except the saddle-horses, run out during winter.

The number of inhabitants is computed to be between seven and eight thousand. About 700 are employed in the mines and in the fishery: the rest are gentlemen-farmers, and subtenants or servants. The women spin. The servants are paid in kind; the sixth part of the crop. They have houses gratis: the master gives them the seed for the first year, and lends them horses to plough annually the land annexed.

The quadrupeds of this island, as enumerated by Mr Pennant†, are fots, weefels, otters, andj hares: the last small, dark-coloured, and bad runners. The birds are eagles, peregrine falcons, black and red game, and a very few ptarmigana. Red-breasted geese breed on the shore among the loose stones, wild geese in the moors, and herons in the island in Loch-guirm. The fish are plaice, smear-dab, large dabs, mullets, bal-lan, lump-fish, black goby, greater dragonet, and that rare fish the lepadogaster of M. Gouan. Vipers swarm in the heath: the natives retain the vulgar error of their stinging with their forked tongues; that a sword on which the poison has fallen will hiss in water like a red-hot iron; and that a poultice of human ordure is an infallible cure for the bite.

In this island, Mr Pennant informs us, several ancient diversions and superstitions are still preserved: the last indeed are almost extinct, or at most lurk only amongst the very meanest of the people. The late-wakes or funerals, like those of the Romans, were attended with sports, and dramatic entertainments composed of many parts, and the actors often changed their dresses suitably to their characters. The subject of the drama was historical, and preserved by memory.—The

power of fascination is as strongly believed here as it was by the shepherds of Italy in times of old.

Nescio quis teneros oculos mihi fascinat agnos?

But here the power of the evil-eye affects more the milch-cows than lambs. If the good housewife perceives the effect of the malicious on any of her kine, she takes as much milk as she can drain from the enchanted herd (for the witch commonly leaves very little). She then boils it with certain herbs, and adds to them flints and untempered steel: after that she secures the door, and invokes the three sacred persons. This puts the witch into such an agony, that she comes nilling-willing to the house, begs to be admitted, to obtain relief by touching the powerful pot: the good woman then makes her terms; the witch restores the milk to the cattle, and in return is freed from her pains. But sometimes, to save the trouble of those charms (for it may happen that the disorder may arise from other causes than an evil-eye), the trial is made by immersing in milk a certain herb, and if the cows are supernaturally affected, it instantly distills blood. The unsuccessful lover revenges himself on his happy rival by charms potent as those of the shepherd Alpheibæus, and exactly similar:

*Necesse tribus Adis ternos, Amarylli, colores:
Necesse, Amarylli, modo.*

Donald takes three threads of different hues, and ties three knots on each, three times imprecating the most cruel disappointments on the nuptial bed: but the bridegroom, to avert the harm, stands at the altar with an untied shoe, and puts a sixpence beneath his foot.

History furnishes very few materials for the great events or revolutions of Ilay. It seems to have been long a seat of empire, probably jointly with the Isle of Man, as being most conveniently situated for the government of the rest of the Hebrides; for Crovan the Norwegian, after his conquest of that island in 1066, retired and finished his days in Ilay. There are more Danish or Norwegian names of places in this island than any other: almost all the present farms derive their titles from them; such as Persibus, Torridale, Torribolse, and the like. On the retreat of the Danes it became the seat of their successors the lords of the isles; and continued, after their power was broken, in the reign of James III. in their descendants the Macdonalds, who held or ought to have held it from the crown. It was in the possession of a Sir James Macdonald, in the year 1598, the same who won the battle of Traii-dhruinard. His power gave umbrage to James VI. who directed the lord of Macleod, Cameron of Lochiel, and the Macneiles of Barra, to support the Macleans in another invasion. The rival parties met near the hill of Benbigger, east of Kil-arow; a fierce engagement ensued, and the Macdonalds were defeated and almost entirely cut off. Sir James escaped to Spain; but returned in 1620, was pardoned, received a pension, and died the same year at Glasgow; and in him expired the last of the great Macdonalds. But the king, irritated by the disturbances raised by private wars, waged between these and other clans, resumed the grant made by his predecessor, and transferred it to Sir John Campbell of Calder, who held it on paying an annual feu-duty of five hundred pounds sterling, which is paid to this day. The island

† *Voyage to the Hebrides.* ii. 263.

Ilchester,
Ildefonso.

island was granted to Sir John as a reward for his undertaking the conquest; but the family considered it as a dear acquisition, by the loss of many gallant followers, and by the expences incurred in support of it.

ILCHESTER, a town of Somersetshire in England, seated on the river Yeovil, 129 miles from London, is so called, because it once had a castle, and stands on the river Ivel. It is a place of great antiquity, as appears by the Roman coins which are sometimes dug up. It is likewise evident, from the ruins and from two towers on the bridge, that it was once a large place, and encompassed with a double wall. It also had several parish churches, though now but one. It is governed by two bailiffs, who with the twelve burgesses are lords of the manor. In the reign of Edward III. the assizes for the county were fixed here, which have since been held alternately at Wells, Taunton, and Bridgewater. The knights of the shire are always chosen here, and it is the place for the county-courts and jail. On the latter is its chief dependence, and therefore it cannot be very polite. It is noted for being the birth-place of Roger the famous Friar Bacon. Ilchester is an earldom in the Fox family.

ILDEFONSO (St), a celebrated royal residence of Spain, distant about two miles from Segovia. It was erected by Philip V. in the midst of a solitary wood, and in the bosom of steep mountains. It is chiefly remarkable for its gardens. There is nothing magnificent in the palace, particularly in its exterior appearance. The front on the side of the garden is of the Corinthian order, and not destitute of elegance. Here are the king's apartments, which look upon a parterre surrounded with vases and marble statues, and a cascade which, for the richness of its decorations, may be compared with the finest of the kind.

The purity and clearness of the water is indeed incomparable. Philip V. could not, in this respect, be better served by nature. From the mountains which shade the palace descend several rivulets, which supply the reservoirs. These waters answer the double purpose of supplying numerous fountains, and of diffusing life and verdure through the magnificent gardens, the sight of which alone is a sufficient recompence for a journey into Spain. They are on the inside a league in circumference. The inequality of the ground affords every moment new points of view. The principal alleys answer to different summits of neighbouring mountains; and one in particular produces the most agreeable effect. It is terminated at one end by the grand front of the palace. From this point are seen, at one view, five fountains, ornamented with elegant groups, rising into an amphitheatre, above which appear the summits of lofty mountains. The most elevated of these groups is that of Andromeda fastened to a rock. When seen at a little distance it is perhaps defective, because the rock appears too diminutive by the side of the monster which threatens Andromeda; and of Perseus, by whom it is attacked; but the whole contributes to the beauty of the view. The most remarkable of the five groups is that of Neptune.

† Travels in
Spain, l. 68.

“Genius (says M. Bourgoanne†) presided at the composition and in the choice of the situation; the deity of the ocean appears erect, surrounded by his marine court. His attitude, his threatening counte-

Ildefonso.

nance, and the manner of holding his trident, announce that he has just imposed silence on the mutinous waves; and the calm which reigns in the basin, defended from every wind by the triple wall of verdure by which it is surrounded, seem to indicate that he has not issued his commands in vain. Often have I seated myself, with Virgil in my hand, by the side of this silent water, under the shade of the verdant foliage, nor ever did I fail to recollect the famous *Quas Ego!*

“There are other fountains worthy of the attention of the curious; such as that of Latona, where the limpid heavens, some perpendicularly, and others in every direction, fall from the hoarse throats of the Lycian peasants, half transformed into frogs, and spouting them forth in such abundance, that the statue of the goddess disappears under the wide mantle of liquid crystal; that also of Diana in the bath, surrounded by her nymphs; in the twinkling of an eye all the chaste court is hidden beneath the waters; the spectator imagines he hears the whistling of aquatic birds, and the roaring of lions, from the place whence this momentary deluge escapes by a hundred canals. The fountain of Fame is formed by a single jet-d'eau, which rise 130 feet, exhibiting to the distance of several leagues round the triumph of art over nature, and falls in a gentle shower upon the gazing spectators. There are some situations in the gardens of St Ildefonso, whence the eye takes in the whole of the greater part of these fountains, and where the ear is delighted with the harmony of their murmurs. The traveller who wishes to charm all his senses at once, must take his station on the high flat ground in front of the king's apartment. In the thick part of the foliage are contrived two large arbours, from the top of which are seen twenty crystal columns rising into the air to the height of the surrounding trees, mixing their resplendent whiteness with the verdure of the foliage, uniting their confused noise to the rustling of the branches, and refreshing and embalming the air: if the traveller here experience no pleasing sensations, let him return home, he is utterly incapable of feeling either the beauties of art or nature.

“The reader may here imagine (continues our author) my enthusiasm too extravagant. He is mistaken; let him follow me to the great reservoir of abundant and limpid waters. He will have to climb for some minutes, but will not regret the trouble he has taken. Let us suppose ourselves arrived at the long and narrow alley which takes up the whole of the upper part of the gardens; proceed to the middle, and turn your face toward the castle. To the vast horizon around you, no other boundaries are discovered but those which limit the human sight; these alone prevent you from discovering the Pyrenees. Observe the steeple, which seems but a point in the immense extent: you will perhaps imagine it to be that of the parish church of St Ildefonso; but, in reality, it is the cathedral of Segovia, at two leagues distance. The gardens, through which you have passed, become narrower to the eye. You suppose yourself close to the royal habitation; the alleys, fountains, and parterres, have all disappeared; you see but one road, which, in the form of a vessel, upon the prow of which you seem to stand, has its stern on the top of the palace. Afterward turn and take a view of the little lake behind you,

Ildefonso. you, of which the irregular borders do not, like what we call our English gardens, merely ape the disorder of nature. Nature herself has traced them, except on the side where you stand. This straight alley is united at each end to the curve which surrounds the reservoir. The waters, which stream in abundance from the sides of the mountain in front, meet in this reservoir, and thence descend by a thousand invisible tubes to other reservoirs, whence they are spouted in columns or sheets upon the flowery soil to which they were strangers. The birds, drawn by their clearness, come to skim and agitate their crystal. The image of the tufted woods which surround them is reflected from their immoveable surface, as is also that of some simple and rural houses, thrown, as by accident, into this delightful picture, which Lorrain would have imitated, but perhaps could not have imagined. The opposite bank is obscured by thick shades. Some hollows, overshadowed by arching trees, seem to be the asylums of the Naiades. Disturb them not by indiscreet loquacity, but silently admire and meditate.

"It is impossible, however, not to go to the source of these waters; let us follow the meandering of their course, and observe the winding paths which there terminate, after appearing and disappearing at intervals through the copse. Let us listen to the bubbling of the rivulets which from time to time escape from our sight, and hasten to the rendezvous assigned them by the descendants of Louis XIV. They formerly lost themselves in the valleys, where they quenched the thirst of the humble inhabitants, but are now consecrated to the pleasures of kings. Ascending the back of the pyramidal mountain, behind which their source is concealed, we arrive at the wall which confines a part of them in the garden, and which was hidden by the trees; nothing, however, ought here to recal to mind exclusive property and slavery. Woods, waters, and the majestic solitude of mountains, which are at a distance from the tumult of courts and cities, are the property of every man.—Beyond this wall, which forms the exterior enclosure of the gardens, is an empty and flat ground, where the infant Don Louis, brother to the king, chose a place which he consecrated to cultivation. Farther on, the mountain becomes more steep, and is covered with trees to its summit. Let us now return; as we seek amusement and not fatigue. We will follow the course of the waters, they descend in bubbling streams from one level of the gardens to the other. In their course, in one place they water the feet of the trees, in others they cross an alley to nourish more slowly the plants of a parterre. From the basin of Andromeda they run between two rows of trees in the form of a canal, the too sudden inclination of which is taken off by cascades and windings. They receive and carry with them from the gardens the rivulets; which after having played amongst the gods and nymphs, and moistened the throats of the swans, tritons, and lions, humbly descend under ground, and run on into the bosom of the neighbouring meadows, where they fulfil purposes less brilliant but more useful.

"We must not quit these magnificent gardens without stopping at a place which appears to promise much, but produces not any very great effect. This is the square of the eight alleys, *Plaza de las ocho calles*. In

Nº 164.

the centre is the group of Pandora, the only one which is of whitened stone, all the others are of white marble or lead painted of a bronze colour. Eight alleys answer to this centre, and each is terminated by a fountain. Plats of verdure fill up the intervals between the alleys, and each has an altar under a portico of white marble by the side of a basin sacred to some god or goddess. These eight altars, placed at equal distances, and decorated among other jets-d'eau, have two which rise in the form of tapers on each side of their divinities. This cold regularity displeased Philip V. who a little before his death, when visiting the gardens, made some severe reproaches to the inventor upon the subject. Philip had not the pleasure of completely enjoying what he had created; death surprised him when the works he had begun were but half finished. The undertaking was however the most expensive one of his reign. The finances of Spain, so deranged under the princes of the house of Austria (thanks to the wife calculations of Orry, to the subsidies of France, and still more to the courageous efforts of the faithful Castilians), would have been sufficient for three long and ruinous wars, and for all the operations of a monarchy which Philip V. had conquered and formed anew, as well as to have resisted the shocks of ambition and political intrigue; but they sunk beneath the expensive efforts of magnificence."

It is singular that the castle and gardens of St Ildefonso should have cost about 45,000,000 of piastres, precisely the sum in which Philip died indebted. This enormous expence will appear credible, when it is known that the situation of the royal palace was at the beginning of this century the sloping top of a pile of rocks; that it was necessary to dig and hew out the stones, and in several places to level the rock; to cut out of its sides a passage for a hundred different canals, to carry vegetative earth to every place in which it was intended to substitute cultivation for sterility, and to work a mine to clear a passage to the roots of the numerous trees which are there planted. All these efforts were crowned with success. In the orchards, kitchen gardens, and parterres, there are but few flowers, espaliers, or plants, which do not thrive; but the trees, naturally of a lofty growth, and which consequently must strike their roots deep into the earth, already prove the insufficiency of art when it attempts to struggle against nature. Many of them languish with withered trunks, and with difficulty keep life in their almost naked branches. Every year it is necessary to call in the aid of gunpowder to make new beds for those which are to supply their place; and none of them are covered with that tufted foliage which belongs only to those that grow in a natural soil. In a word, there are in the groves of St Ildefonso, marble statues, basins, cascades, limpid waters, verdure, and delightful prospects, every thing but that which would be more charming than all the rest, thick shades.

The court of Spain comes hither annually during the heat of the dog-days. It arrives towards the end of July, and returns at the beginning of October. The situation of St Ildefonso, upon the declivity of the mountains which separate the two Castiles, and fronting a vast plain where there is no obstacle to the passage of the north wind, renders this abode delightful in summer. The mornings and evenings of the hottest days

Herds,
lex. days are agreeably cool. Yet as this palace is upwards of 20 leagues from Madrid, and half of the road which leads to it crosses the broad tops of mountains, extremely steep in many places, it is much more agreeable to the lovers of the chace and solitude than to others.

ILERDA (anc. geog.), the capital of the Illegertes; situated on an eminence between the rivers Sicoris and Cinga: An unhappy city, often besieged, and often taken, because lying exposed to the incursions from Gaul; and under Gallienus it was destroyed by the Germans. Now LERIDA, in Catalonia, on the river Segra.

ILEX, the HOLM or HOLLY Tree: A genus of the tetragynia order, belonging to the tetrandria class of plants; and in the natural method ranking under the 43d order, *Dumose*. The calyx is quadridentated; the corolla rotaceous; there is no style; the berry is monospermous.

There are several species of this genus; but the most remarkable is the aquifolium, or common holly. Of this there are a great number of varieties with variegated leaves, which are propagated by the nursery-gardeners for sale, and some years past were in very great esteem, but at present are but little regarded, the old taste of filling gardens with shorn evergreens being pretty well abolished; however, in the disposition of clumps, or rather plantations, of evergreen trees and shrubs, a few of the most lively colours may be admitted, which will have a good effect in the winter-season, if they are properly disposed.

The best of these varieties are the painted lady-holly, British holly, Bradley's best holly, phyllis or cream-holly, milkmaid holly, Prichet's best holly, gold-edged hedgehog holly, Chyney's holly, glory-of-the-west holly, Broaderick's holly, Partridge's holly, Herefordshire white holly, Blind's cream holly, Longstaff's holly, Eales's holly, silver-edged hedgehog holly. All these varieties are propagated by budding or grafting them upon stocks of the common green holly: there is also a variety of the common holly with smooth leaves; but this is frequently found intermixed with the prickly-leaved on the same tree, and often on the same branch there are both sorts of leaves.

The common holly grows naturally in woods and forests in many parts of England, where it rises from 20 to 30 feet high, and sometimes more, but their ordinary height is not above 25 feet: the stem by age becomes large, and is covered with a greyish smooth bark; and those trees which are not loped or browsed by cattle, are commonly furnished with branches the greatest part of their length, so form a sort of cone; the branches are garnished with oblong oval leaves, of a lucid green on their upper surface, but are pale on their under, having a strong midrib: the edges are indented and waved, with sharp thorns terminating each of the points, so that some of the thorns are raised upward, and others are bent downward, and being very stiff they are troublesome to handle. The leaves are placed alternate on every side of the branches; and from the base of their footstalks come out the flowers in clusters, standing on very short footstalks; each of these sustain five, six, or more flowers. They are of a dirty white, and appear in May; but are succeeded by roundish berries, which turn to a beautiful red a-

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bout Michaelmas, and continue on the trees, if they are not destroyed, till after Christmas.

The common holly is a very beautiful tree in winter; therefore deserves a place in all plantations of evergreen trees and shrubs, where its shining leaves and red berries make a fine variety; and if a few of the best variegated kinds are properly intermixed, they will enliven the scene. It is propagated by seeds, which never come up the first year, but lie in the ground as the haws do; therefore the berries should be buried in the ground one year, and then taken up and sown at Michaelmas, upon a bed exposed only to the morning sun; the following spring the plants will appear, which must be kept clean from weeds; and if the spring should prove dry, it will be of great service to the plants if they are watered once a-week; but they must not have it oftener, nor in too great quantity, for too much moisture is very injurious to these plants when young. In this seed-bed the plants may remain two years; and then should be transplanted in the autumn, into beds at about six inches asunder, where they may stand two years longer; during which time they must be constantly kept clean from weeds; and if the plants have thriven well, they will be strong enough to transplant where they are designed to remain: for when they are transplanted at that age, there will be less danger of their failing, and they will grow to a larger size than those which are removed when they are much larger; but if the ground is not ready to receive them at that time, they should be transplanted into a nursery in rows at two feet distance, and one foot asunder in the rows, in which place the plants may remain two years longer; and if they are designed to be grafted or budded with any of the variegated kinds, that should be performed after the plants have grown one year in the nursery: but the plants so budded or grafted should continue two years after in the nursery, that they may make good shoots before they are removed; though the plain ones should not stand longer than two years in the nursery, because when they are older they do not transplant so well. The best time for removing hollies is in the autumn, especially in dry land; but where the soil is cold and moist, they may be transplanted with great safety in the spring, if the plants are not too old, or have not stood long unremoved, for if they have, there is great doubt of their growing when removed.

Uses. Sheep in the winter are fed with croppings of holly. Birds eat the berries. The bark fermented and afterwards washed from the woody fibres, makes the common bird-lime. The plant makes an impenetrable fence, and bears cropping; however, it is not found in all respects to answer for this purpose equally well with the hawthorn. The wood is used in fireworking, and is sometimes stained black to imitate ebony. Handles for knives and cogs for mill-wheels are made of it. It is also made into hones for whetting of razors. Mr Miller says, he has seen the floor of a room laid with compartments of holly and mahogany, which had a very pretty effect.

ILFRACOMB, a town of Devonshire, seated on the Severn sea, almost opposite to Swansea in Glamorganshire, 186 miles from London. It is a populous, rich, trading sea-port, especially with herrings in the rich,

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Bristol-channel; noted for maintaining constant lights to direct the sailors; for its convenience of building and repairing ships; and for the safe shelter ships from Ireland find here, when it is extremely dangerous for them to run into the mouth of the Taw, which they call Barnstaple-water; and this is one reason why the Barnstaple merchants do so much of their business at this port. The harbour, with its quay, warp-house, light-house, pilot-boats, and tow-boats, were formerly maintained at the expence of the ancestors of the lord of the manor; and then it had a quay or pier 850 feet long; but by time and the violence of the sea all went to decay; to remedy which, the parliament passed an act in 1731, for both repairing and enlarging the piers, harbour, &c. It is governed by a mayor, bailiffs, &c. and consists chiefly of one street of scattered houses almost a mile long. The parish is large, containing several tythings and manors.

ILIAC PASSION, a violent and dangerous kind of colic; called also *volvulus*, *miserere mei*, and *chordapfus*. It takes its name from the intestine *ilion*, on account of its being usually affected in this distemper; or perhaps from the Greek verb *ilaw* "to wind or twist"; whence also it is the Latins call it *volvulus*. See *MEDICINE INDEX*.

ILIAD, the name of an ancient epic poem, the first and finest of those composed by Homer.

The poet's design in the Iliad was to show the Greeks, who were divided into several little states, how much it was their interest to preserve a harmony and good understanding among themselves; for which end he sets before them the calamities that befel their ancestors from the wrath of Achilles, and his misunderstanding with Agamemnon; and the advantages that afterwards accrued to them from their union. The Iliad is divided into 24 books or rhapsodies, which are marked with the letters of the alphabet.

ILISSUS, a river running to the east of Athens; which, with the Eridanus running on the west side, falls below the city into the sea. Sacred to the muses, called *Ilissades*; on whose bank their altar stood, and where the lustration in the less mysteries was usually performed.

ILIUM, **ILION**, or *Ilios*, (anc. geog.) a name for the city of Troy, but most commonly used by the poets, and distinguished by the epithet *Vetus*; at a greater distance from the sea than what was afterwards called *Ilium Novum*, and thought to be the *Ilienſum Pagus* of Strabo. New or modern Ilium was a village nearer the sea, with a temple of Minerva; where Alexander, after the battle of Granicus, offered gifts, and called it a city, which he ordered to be enlarged. His orders were executed by Lysimachus, who encompassed it with a wall of 40 stadia. It was afterwards adorned by the Romans, who granted it immunities as to their mother-city. From this city the *Ilias* of Homer takes its name, containing an account of the war carried on between the Greeks and Trojans on account of the rape of Helen; a variety of disasters being the consequence, gave rise to the proverb *Ilias Malorum*.

ILKUCH, a royal town of Poland, in the palatinate of Cracow, remarkable for its silver mines mixed with lead. It is seated in a barren and mountainous country, in E. Long. 20. 0. N. Lat. 50. 26.

ILLECEBRUM, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 12th order, *Holoracea*. The calyx is pentaphyllous, and cartilaginous; there is no corolla; the stigma is simple; [the capsule quinquevalved, and monospermous. There are several species, of which the most remarkable are the *paronychia* and the *capitatum*. Both these have trailing stalks near two feet long, which spread on the ground, garnished with small leaves like those of knot-grass. The heads of the flowers come out from the joints of the stalks, having neat silvery bractea surrounding them, which make a pretty appearance. Their flowers appear in June, and there is generally a succession of them for at least two months; and when the autumn proves warm, they will ripen their seeds in October. They are propagated by seeds which should be sown in a bed of light earth in the beginning of April: the plants will come up in May, when they should be kept clean from weeds till they are fit to remove. Some should be planted in small pots, and the rest in a warm border, observing to water and shade them till they have taken new root. These plants are sometimes killed in severe winters; for which reason it is directed to plant some of them in pots, that they may be sheltered during that season.

ILLENOIS, a people of North America, inhabiting a country lying near a large lake of the same name (called also *Michigan*), formed by the river St Laurence. The country is fertile; and the people plant Indian corn, on which they chiefly subsist. They are civil, active, lively, and robust; and are much less cruel in their dispositions than the other Indian nations. They are, however, said to be great libertines, and to marry a number of wives; but some of their villages have embraced Christianity.

ILLICIUM, in botany: A genus of the pentagynia order, belonging to the dodecandria class of plants; and in the natural method ranking with those of which the order is doubtful. The calyx is tetraphyllous, and deciduous; there are eight petals, and eight petaloid subulated nectaria. There are 16 stamina with bifid antheræ; the capsules are ovate, compressed, and monospermous. There are two species, viz. 1. The *floridanum*, with red flowers, and very odorous fruit. It is a native of China. 2. The *anifatum*, a native of the woods of China and Japan. It rises with an erect branched stem to the height of a cherry-tree; and is covered with an ash-coloured bark, under which is another bark that is green, fleshy, somewhat mucous, and of an aromatic taste, combined with a small degree of astringency. The wood is hard and brittle; the pith small in quantity, fungous, and of a green herbaceous colour. The leaves resemble those of laurel; the flowers, in some sort, those of narcissus. These last generally stand single, are of a pale white, and consist of 16 petals, which differ in their form. The extremity of the flower-stalk being continued into the germen or seed-bud of the flower, forms eight conjoined capsules, or one deeply divided into eight parts. Of these capsules, some frequently decay; the rest inclose each a single seed, somewhat resembling that of palma christi, and which, when the hardish corticle that closely covers and involves it is broken, exhibits a kernel that is white, fleshy, soft, and of a vapid taste.

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taite. The bonzes, or priests of China and Japan, infuse into the inhabitants a superstitious belief, that the gods are delighted with the presence of this tree. Hence they generally place before their idols garlands and bundles made of the branches. A similar opinion the Bramins inculcate into the Indians, of the Malabar fig, or *ficus religiosa*. The bark of the anise-tree, reduced to powder, and equally burnt, the public watchmen in Japan, by a very curious contrivance described by Kempfer, render useful in the measuring of time during the darkness of the night. The same powder is frequently burnt in brazen vessels on the Japanese altars, as incense is in other countries, from a belief that the idols in whose honour the ceremony is performed are greatly refreshed with the agreeable fragrance of its odour. It is remarkable, that a branch of this tree being added to the decoction of the poisonous fish, termed by the Dutch *de opblaaser* (a fish the most delicate, if the poisonous matter be first properly expelled), increases its noxious quality, and exasperates the poison to an astonishing degree of activity and power.

ILLUMINATING, a kind of miniature-painting, anciently much practised for illustrating and adorning books. Besides the writers of books, there were artists whose profession was to ornament and paint manuscripts, who were called *illuminators*; the writers of books first finished their part, and the illuminators embellished them with ornamented letters and paintings. We frequently find blanks left in manuscripts for the illuminators, which were never filled up. Some of the ancient manuscripts are gilt and burnished in a style superior to later times. Their colours were excellent, and their skill in preparing them must have been very great.

The practice of introducing ornaments, drawings, emblematical figures, and even portraits, into manuscripts, is of great antiquity. Varro wrote the lives of seven hundred illustrious Romans, which he enriched with their portraits, as Pliny attests in his *Natural History* (lib. xxxv. chap. 2.) Pomponius Atticus, the friend of Cicero, was the author of a work on the actions of the great men amongst the Romans, which he ornamented with their portraits, as appears in his life by Cornelius Nepos (chap. 18.) But these works have not been transmitted to posterity. There are, however, many precious documents remaining, which exhibit the advancement and decline of the arts in different ages and countries. These inestimable paintings and illuminations display the manners, customs, habits ecclesiastical, civil, and military, weapons and instruments of war, utensils and architecture of the ancients; they are of the greatest use in illustrating many important facts relative to the history of the times in which they were executed. In these treasures of antiquity are preserved a great number of specimens of Grecian and Roman art, which were executed before the arts and sciences fell into neglect and contempt. The manuscripts containing these specimens form a valuable part of the riches preserved in the principal libraries of Europe. The Royal, Cottonian, and Harleian libraries, as also those in the two universities in England, the Vatican at Rome, the imperial at Vienna, the royal at Paris, St Mark's at Venice, and many others.

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A very ancient MS. of *Genesis*, which was in the Cottonian library, and almost destroyed by a fire in 1731, contained two hundred and fifty curious paintings in water colours. Twenty-one fragments, which escaped the fire, are engraven by the society of antiquaries of London. Several specimens of curious paintings also appear in Lambecius's catalogue of the imperial library at Vienna, particularly in Vol. III. where forty-eight drawings of nearly equal antiquity with those in the Cottonian library are engraven; and several others may be found in various catalogues of the Italian libraries. The drawings in the Vatican Virgil made in the fourth century, before the arts were entirely neglected, illustrate the different subjects treated of by the Roman poet. A miniature drawing is prefixed to each of the gospels brought over to England by St Augustine in the sixth century, which is preserved in the library of Corpus Christi college, Cambridge: in the compartments of those drawings are depicted representations of several transactions in each gospel. The curious drawings, and elaborate ornaments in St Cuthbert's gospels made by St Ethelwald, and now in the Cottonian library, exhibit a striking specimen of the state of the arts in England in the seventh century. The same may be observed with respect to the drawings in the ancient copy of the four gospels preserved in the cathedral church of Litchfield, and those in the Codex Rushworthianus in the Bodleian library at Oxford. The life of St Paul the hermit, now remaining in Corpus Christi college, Cambridge, (G 2), affords an example of the style of drawing and ornamenting letters in England in the eighth century; and the copy of Prudentius's *Psycomachia* in the Cottonian library (Cleop. c. 8.) exhibits the style of drawing in Italy in the ninth century. Of the tenth century there are Roman drawings of a singular kind in the Harleian library (N^o 2820.) N^{os} 5280, 1802, and 432, in the same library, contain specimens of ornamented letters, which are to be found in Irish MSS. from the twelfth to the fourteenth century. Caedmon's Poetical Paraphrase of the book of *Genesis*, written in the eleventh century, which is preserved amongst F. Junius's MSS. in the Bodleian library, exhibits many specimens of utensils, weapons, instruments of music, and implements of husbandry used by the Anglo-Saxons. The like may be seen in extracts from the Penateuch of the same age, in the Cottonian library (Claud. B. 4.) The manuscript copy of Terence in the Bodleian library (D. 17.) displays the dresses, masks, &c. worn by comedians in the twelfth century, if not earlier. The very elegant Psalter in the library of Trinity College, Cambridge, exhibits specimens of the art of drawing in England in the same century. The Virgil in the Lambeth library of the 13th century (N^o 471.), written in Italy, shows both by the drawings and writing, that the Italians produced works much inferior to ours at that period. The copy of the Apocalypse in the same library (N^o 209), contains a curious example of the manner of painting in the fourteenth century.—The beautiful paintings in the history of the latter part of the reign of king Rich. II. in the Harleian library (N^o 1319), afford curious specimens of manners and customs, both civil and military, at the close of the fourteenth and in the beginning of the fifteenth century; as does N^o 2278

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in the same library.—Many other instances might be produced; but those who desire farther information may consult Strutt's *Regal and Ecclesiastical Antiquities*, 4to, and his *Herda-Angel-cynnan* lately published in three vols.

This art was much practised by the clergy, and even by some in the highest stations in the church. "The famous Osmund (says Bromton), who was consecrated bishop of Salisbury A. D. 1076, did not disdain to spend some part of his time in writing, binding, and *illuminating* books." Mr Strutt, as already noticed, has given the public an opportunity of forming some judgment of the degree of delicacy and art with which these illuminations were executed, by publishing prints of a prodigious number of them, in his *Regal and ecclesiastical antiquities of England*, and *View of the customs, &c. of England*. In the first of these works we are presented with the genuine portraits, in miniature, of all the kings, and several of the queens of England, from Edward the Confessor to Henry VII. mostly in their crowns and royal robes, together with the portraits of many other eminent persons of both sexes.

The illuminators and painters of this period seem to have been in possession of a considerable number of colouring materials, and to have known the arts of preparing and mixing them, so as to form a great variety of colours; for in the specimens of their miniature-paintings that are still extant, we perceive not only the five primary colours, but also various combinations of them. Though Strutt's prints do not exhibit the bright and vivid colours of the originals, they give us equally a view, not only of the persons and dresses of our ancestors, but also of their customs, manners, arts, and employments, their arms, ships, houses, furniture, &c. and enable us to judge of their skill in drawing. The figures in those paintings are often stiff and formal; but the ornaments are in general fine and delicate, and the colours clear and bright, particularly the gold and azure. In some of these illuminations the passions are strongly painted. How strongly, for example, is terror painted in the faces of the earl of Warwick's sailors, when they were threatened with a shipwreck, and grief in the countenances of those who were present at the death of that hero? After the introduction of printing, this elegant art of illuminating gradually declined, and at length was quite neglected.

Before concluding, it may not be improper to observe, that from the fifth to the tenth century, the miniature paintings which we meet with in Greek MSS. are generally good, as are some which we find among those of Italy, England, and France. From the tenth to the middle of the fourteenth century they are commonly very bad, and may be considered as so many monuments of the barbarity of those ages; towards the latter end of the fourteenth, the paintings in manuscripts were much improved; and in the two succeeding centuries, many excellent performances were produced, especially after the happy period of the restoration of the arts, when great attention was paid to the works of the ancients, and the study of antiquity became fashionable.

ILLUMINATORS. See ILLUMINATING.

ILLUMINED, ILLUMINATI, a church term, anci-

ently applied to such persons as had received baptism. This name was occasioned by a ceremony in the baptism of adults; which consisted in putting a lighted taper in the hand of the person baptized, as a symbol of the faith and grace he had received in the sacrament.

ILLUMINED, *Illuminati*, is also the name of a sect of heretics, who sprang up in Spain about the year 1575, and were called by the Spaniards *Alambrados*. Their principal doctrines were, that by means of a sublime manner of prayer, which they had attained to, they entered into so perfect a state, that they had no occasion for ordinances, sacraments, nor good works; and that they could give way, even to the vilest actions, without sin. The sect of Illumined was revived in France in the year 1634. and were soon after joined by the Guerinets, or disciples of Peter Guerin, who together made but one body, called also ILLUMINED; but they were so hotly pursued by Louis XIII. that they were soon destroyed. The brothers of the Rosy Cross are sometimes also called Illumined. See ROSYCRUSIAN.

ILLUSTRIOUS, *ILLUSTRIS*, was heretofore, in the Roman empire, a title of honour peculiar to people of a certain rank. It was first given to the most distinguished among the knights, who had a right to bear the *latus clavus*: afterwards, those were intitled *illustris* who held the first rank among those called *honorati*; that is, the *præfecti prætorii*, *præfecti urbis*, *treasurers*, *comites*, &c.

There were, however, different degrees among the *illustris*: as in Spain they have *grandees* of the first and second class, so in Rome they had their *illustris*, whom they called great, *majores*; and others less, called *illustris minores*.—For instance; the *præfectus prætorii* was a degree below the master of the offices, though they were both *illustris*.

The Novels of Valentinian distinguish as far as five kinds of *illustris*; among whom, the *illustris administratores* bear the first rank.

ILLYRICUM, (*Solum* perhaps understood) Livy, Herodian, St. Paul; called *Illyris* by the Greeks, and sometimes *Illyria*: the country extending from the Adriatic to Pannonia thus called. Its boundaries are variously assigned. Pliny makes it extend in length from the river Arsis to the Drinius, thus including Liburnia to the west, and Dalmatia to the east: which is also the opinion of Ptolemy; who settles its limits from mount Scardus and the Upper Moesia on the east, to Istria in the west. A Roman province, divided by Augustus into the Superior and Inferior, but of which the limits are left undetermined both by ancient historians and geographers. *Illyrii* the people; called *Illyres* by the Greeks. The country is now called *Slavonia*.

ILLYRIUS, (Matthias, Flaccus, or Francowitz), one of the most learned divines of the Augsburgh confession, born in Istria, anciently called *Illyrica*, in 1520. He is said to have been a man of vast genius, extensive learning, of great zeal against Popery; but of such a restless and passionate temper, as overbalanced all his good qualities, and occasioned much disturbance in the Protestant church. He published a great number of books, and died in 1575.

IMAGE, in a religious sense, is an artificial representation

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Image.

* See Strutt, vol. iii. plates 56, 58.

Image. Representation or similitude of some person or thing, used either by way of decoration and ornament, or as an object of religious worship and adoration; in which last sense, it is used indifferently with the word *Idol*.

The noble Romans preserved the *images* of their ancestors with a great deal of care and concern, and had them carried in procession at their funerals and triumphs: these were commonly made of wax, or wood, though sometimes of marble or brass. They placed them in the vestibules of their houses; and they were to stay there, even if the houses happened to be sold, it being accounted impious to displace them. Appius Claudius was the first who brought them into the temples, in the year of Rome 259, and he added inscriptions to them, showing the origin of the persons represented, and their brave and virtuous achievements.—It was not, however, allowed for all, who had the *images* of their ancestors in their houses, to have them carried at their funerals; this was a thing only granted to such as had honourably discharged themselves of their offices: for those who failed in this respect, forfeited that privilege; and in case they had been guilty of any great crime, their *images* were broken in pieces. See *IGNOBILES* and *Jus*.

The Jews absolutely condemn all *images*, and do not so much as suffer any statues or figures in their houses, much less in their synagogues or places of worship.

The use and adoration of *images* are things that have been a long time controverted in the world.

It is plain, from the practice of the primitive church, recorded by the earlier fathers, that Christians, for the first three centuries after Christ, and the greater part of the fourth, neither worshipped *images* nor used them in their worship. However, the greater part of the Popish divines maintain, that the use and worship of *images* were as ancient as the Christian religion itself: to prove this, they alledge a decree, said to have been made in a council held by the Apostles at Antioch, commanding the faithful, that they may not err about the object of their worship, to make *images* of Christ and worship them. Baron. ad ann. 102. But no notice is taken of this decree, till 700 years after the Apostolic times, after the dispute about *images* had commenced. The first instance that occurs in any credible author of *images* among Christians, is that recorded by Tertullian de Pudicit. c. 10. of certain cups, or chalices, as Bellarmine pretends, on which was represented the parable of the good shepherd carrying the lost sheep on his shoulders: but this instance only proves, that the church, at that time, did not think emblematical figures unlawful ornaments of cups or chalices. Another instance is taken from Eusebius, Hist. Eccl. lib. vii. cap. 18. who says, that in his time there were to be seen two brass statues in the city of Paneas or Caesarea Philippi; the one of a woman on her knees, with her arms stretched out, the other of a man over against her, with his hand extended to receive her: these statues were said to be the *images* of our Saviour and the woman whom he cured of an issue of blood. From the foot of the statue representing our Saviour, says the historian, sprang up an exotic plant, which, as soon as it grew to touch the border of his garment, was said to cure all sorts of distempers. Eusebius, however, vouches none of these things; nay, he supposes that the woman who erected

this statue of our Saviour was a pagan, and ascribes it to a pagan, custom. Farther, Philostorgius, Eccl. Hist. lib. vii. c. 3. expressly says, that this statue was carefully preserved by the Christians, but that they paid no kind of worship to it, because it is not lawful for Christians to worship brass or any other matter. The primitive Christians abstained from the worship of *images*, not, as the Papists pretend, from tenderness to heathen idolaters, but because they thought it unlawful in itself to make any *images* of the Deity. Justin Mart. Apol. ii. p. 44. Clem. Alex. Strom. 5. Strom. 1. and Protr. p. 46. Aug. de Civit. Dei. lib. vii. c. 5. and lib. iv. c. 32. Id. de Fide et Symb. c. 7. Lactant. lib. ii. c. 3. Tertull. Apol. c. 12. Arnob. lib. vi. p. 202. Some of the fathers, as Tertullian, Clemens Alexandrinus, and Origen, were of opinion, that, by the second commandment, the arts of painting and engraving were rendered unlawful to a Christian, styling them evil and wicked arts. Tert. de Idol. cap. 3. Clem. Alex. Admon. ad Gent. p. 41. Orig. contra Celsum lib. vi. p. 182. The use of *images* in churches as ornaments, was first introduced by some Christians in Spain, in the beginning of the fourth century; but the practice was condemned as a dangerous innovation, in a council held at Eliberis in 305. Epiphanius, in a letter preserved by Jerom, tom. ii. ep. 6. bears strong testimony against *images*, and may be considered as one of the first *ICONOCLASTS*. The custom of admitting pictures of saints and martyrs into the churches (for this was the first source of *image-worship*) was rare in the latter end of the fourth century; but became common in the fifth: however, they were still considered only as ornaments; and even in this view, they met with very considerable opposition. In the following century the custom of thus adorning churches became almost universal, both in the east and west. Petavius expressly says, (de Incar. lib. xv. cap. 14.) that no statues were yet allowed in the churches; because they bore too near a resemblance to the idols of the Gentiles. Towards the close of the fourth or beginning of the fifth century, *images*, which were introduced by way of ornament, and then used as an aid to devotion, began to be actually worshipped. However, it continued to be the doctrine of the church in the sixth and in the beginning of the seventh century, that *images* were to be used only as helps to devotion, and not as objects of worship. The worship of them was condemned in the strongest terms by Pope Gregory the Great; as appears by two letters of his written in 601. From this time to the beginning of the eighth century, there occurs no single instance of any worship given or allowed to be given to *images* by any council or assembly of bishops whatever. But they were commonly worshipped by the monks and populace in the beginning of the eighth century; inasmuch, that in the year 726, when Leo published his famous edict, it had already spread into all the provinces subject to the empire.

The Lutherans condemn the Calvinists for breaking the *images* in the churches of the Catholics, looking on it as a kind of sacrilege; and yet they condemn the Romanists (who are professed *image-worshippers*) as idolaters: nor can these last keep pace with the Greeks, who go far beyond them in this point; which has occasioned abundance of disputes among them. See *ICONOCLASTS*.

The Mahometans have a perfect aversion to *images*; which

Image
||
Imam.

which was what led them to destroy most of the beautiful monuments of antiquity, both sacred and profane, at Constantinople.

IMAGE, in *Rhetoric*, also signifies a lively description of any thing in a discourse.

Images in discourse are defined by Longinus, to be, in general, any thoughts proper to produce expressions, and which present a kind of picture to the mind.

But, in the more limited sense, he says, *images* are such discourses as come from us, when, by a kind of enthusiasm, or an extraordinary emotion of the soul, we seem to see the things whereof we speak, and present them before the eyes of those who hear us.

Images, in rhetoric, have a very different use from what they have among the poets: the end principally proposed in poetry is, astonishment and surprise; whereas the thing chiefly aimed at in prose, is to paint things naturally, and to show them clearly. They have this, however, in common, that they both tend to move, each in its kind.

These *images*, or *pictures*, are of vast use, to give weight, magnificence, and strength, to a discourse. They warm and animate it; and, when managed with art, according to Longinus, seem, as it were, to tame and subdue the hearer, and put him in the power of the speaker.

IMAGE, in *Optics*, a figure in the form of any object, made by the rays of light issuing from the several points of it, and meeting in so many other points, either at the bottom of the eye, or on any other ground, or on any transparent medium, where there is no surface to reflect them. Thus we are said to see all objects by means of their images formed in the eye.

IMAGINATION, a power or faculty of the mind, whereby it conceives and forms ideas of things communicated to it by the outward organs of sense. See METAPHYSICS.

Force of IMAGINATION. See MONSTER.

IMAGO, in *Natural History*, is a name given by Linnaeus to the third state of insects, when they appear in their proper shape and colours, and undergo no more transformation.

IMAM, or IMAN, a minister in the Mahometan church, answering to a parish priest among us. The word properly signifies what we call a prelate, *antistes*, one who presides over others; but the Mussulmen frequently apply it to a person who has the care and intendency of a mosque, who is always there at first, and reads prayers to the people, which they repeat after him.

IMAM is also applied, by way of excellence, to the four chiefs or founders of the four principal sects in the Mahometan religion. Thus Ali is the *imam* of the Persian, or, of the sect of the Schiaites; Abu-beker the *imam* of the Sunnites, which is the sect followed by the Turks; Saphii, or Saffi-y, the *imam* of another sect, &c.

The Mahometans do not agree among themselves about this *imamate* or dignity of the *imam*. Some think it of divine right, and attached to a single family, as the pontificate of Aaron.—Others hold, that it is indeed of divine right, but deny it to be so attached to any single family, as that it may not be transferred to another. They add, that the *imam* is to be clear of all gross sins; and that otherwise he

may be deposed, and his dignity may be conferred on another. However this be, it is certain, that after an *imam* has once been owned as such by the Mussulmen, he who denies that his authority comes immediately from God is accounted impious; he who does not obey him is a rebel; and he who pretends to contradict what he says is esteemed a fool, among the orthodox of that religion. The *Imams* have no outward mark of distinction; their habit is the same with that of the Turks in common, except that the turban is a little larger, and folded somewhat differently.

IMAEUS, (anc. geog.), the largest mountain of Asia, (Strabo); and a part of Taurus, (Pliny); from which the whole of India runs off into a vast plain, resembling Egypt. It extends far and wide through Scythia, as far as to the Mare Glaciale, dividing it into the Hither or *Scythia intra Imaum*, and into the Farther or *Scythia extra Imaum*, (Ptolemy); and also stretching out along the north of India to the eastern ocean, separates it from Scythia. It had various names according to the different countries it run through: Ptolemy thinks it is the *Sephar* of Scripture.

IMBECILITY, a languid, infirm state of body, which, being greatly impaired, is not able to perform its usual exercises and functions.

IMBIBING, the action of a dry porous body, that absorbs or takes up a moist or fluid one: thus, sugar imbibes water; a sponge, the moisture of the air, &c.

IMBRICATED, is used by some botanists, to express the figure of the leaves of some plants, which are hollowed like an *imbrex*, or gutter-tile, or are laid in close series over one another like the tiles of a house.

IMERETIA, or IMMERETTA, the name of a kingdom, or rather principality, of Georgia, consisting of four provinces, is under the dominion of a prince named David. See GEORGIA.

The capital, where prince David resides, is called *Curtays*. The remains of a church announce that *Curtays* was formerly a large city; but at present it can scarcely be accounted a village.

Solomon, the father of the present sovereign, ordered the citadel to be destroyed as well as the ramparts of the city; for he thought, and very wisely, that Caucasus was the only fortification capable of being defended by an army of 6000 men undisciplined and destitute of artillery.

The number of the inhabitants of Imeretta is reckoned to be 20,000 families; but the greater part of them live neither in towns nor villages, but are dispersed throughout the level country, each of them possessing a small hut or cottage. These people have fewer strangers among them, and they are more engaging in their appearance, than the Georgians. They are of a milder and less pusillanimous character; and the principal branch of their commerce consists in wines, a considerable quantity of which they export in skins as far as the confines of Georgia. They are acquainted with no other trade; for they are poor and miserable, and greatly oppressed by their lords.

The ordinary revenues of Imeretta, like those of Georgia, arise from a tythe which vassals are obliged to pay in wines, cattle, and corn, and some subsidies furnished annually by neighbouring princes. The ex-

Imeretia.
Imitation.

traordinary revenues for the most part arise from confiscations of every kind ; but notwithstanding this, the finances of the prince are so limited, that he is often under the necessity of going from house to house, to live at the expence of his vassals, never quitting their habitations until the pressing wants of his hosts absolutely compel him. It is therefore probable, that the court of the sovereign of Imeretia is as deficient in brilliancy as his table is in splendor when he dines at home. His principal dishes consist of a certain food called *gom*, which is a kind of millet boiled, and a piece of roast meat, with some high-seasoned sauce. He never eats but with his fingers, for forks and spoons are unknown in Imeretia. At table he generally gives audiences respecting affairs of the first consequence, which he determines as he thinks proper ; for in every country subject to his dominions there is no other law but his will.

On Friday, which is the market-day, all his new edicts are published by a kind of herald, who climbs up into some tree, in order to proclaim the will of his sovereign. The Imerettans profess the religion of the Greek church. Their patriarch must be of the royal family ; but it is seldom that he can either read or write : the priests who compose the rest of the clergy are not much more enlightened. The greater part of their churches are pitiful edifices, which can scarcely be distinguished from the common huts of the inhabitants but by a pasteboard crucifix, and a few coarse paintings of the Virgin, which are seen in them.

IMITATION, derived from the Latin *imitare*, to "represent or repeat," a sound or action, either exactly or nearly in the same manner as they were originally exhibited.

IMITATION, in music, admits of two different senses. Sound and motion are either capable of imitating themselves by a repetition of their own particular modes ; or of imitating other objects of a nobler and more abstracted nature. Nothing perhaps is so purely mental, nothing so remote from external sense, as not to be imitable by music. But as the description of this in M. Rousseau, article *Imitation*, is nobly animated, and comprehends all that is necessary to be said on the subject, we translate it as follows.

"Dramatic or theatrical music (says he) contributes to imitation no less than painting or poetry : it is in this common principle that we must investigate both the origin and the final cause of all the fine arts ; as M. le Batteaux has shown †. But this imitation is not equally extensive in all the imitative arts. Whatever the imagination can represent to itself is in the department of poetry. Painting, which does not present its pictures to the imagination immediately, but to external sense and to one sense alone, paints only such objects as are discoverable by sight. Music might appear subjected to the same limits with respect to the ear ; yet it is capable of painting every thing, even such images as are objects of ocular perception alone : by a magic almost inconceivable, it seems to transform the ears into eyes, and endow them with the double function of perceiving visible objects by the mediums of their own ; and it is the greatest miracle of an art, which can only act by motion, that it can make that very motion represent absolute quiescence. Night,

† See *Beaux Arts réduits à une même principe.*

sleep, silence, solitude, are the noble efforts, the grand images, represented by a picturesque music. We know that noise can produce the same effect with silence, and silence the same effect with noise ; as when one sleeps at a lecture insipidly and monotonically delivered, but wakes the instant when it ends. But music acts more intimately upon our spirits, in exciting by one sense dispositions similar to those which we find excited by another ; and, as the relation between these images cannot be sensible unless the impression be strong, painting, when divested of this energy, cannot restore to music that assistance in imitations which she borrows from it. Though all nature should be asleep, he who contemplates her does not sleep ; and the art of the musician consists in substituting, for this image of insensibility in the object, those emotions which its presence excites in the heart of the contemplator. He not only ferments and agitates the ocean, animates the flame to conflagration, makes the fountain murmur in his harmony, calls the rattling shower from heaven, and swells the torrent to resistless rage ; but he paints the horrors of a boundless and frightful desert, involves the subterraneous dungeon in tenfold gloom, soothes the tempest, tranquillizes the disturbed elements, and from the orchestra diffuses a recent fragrance through imaginary groves ; nay, he excites in the soul the same emotions which we feel from the immediate perception and full influence of these objects."

Under the word *Harmony*, Rousseau has said, that no assistance can be drawn from thence, no original principle which leads to musical imitation ; since there cannot be any relation between chords and the objects which the composer would paint, or the passions which he would express. In the article *Melody*, he imagines he has discovered that principle of imitation which harmony cannot yield, and what resources of nature are employed by music in representing these objects and these passions.

It is hoped, however, that in our article of *Melody*, we have shown upon what principle musical imitation may be compatible with harmony ; though we admit, that from melody it derives its most powerful energy, and its most attractive graces. Yet we must either be deceived beyond all possibility of cure, or we have felt the power of imitative harmony in a high degree. We are certain that the fury, the impetuosity, the rapid vicissitudes, of a battle, may be successfully and vividly represented in harmony. We have participated the exultation and triumph of a conquest, inspired by the sound of a full chorus. We have felt all the solemnity and grandeur of devotion from the slow movement, the deep chords, the swelling harmony, of a sentimental composition played upon the organ. Nor do we imagine harmony less capable of presenting the tender depression, the fluctuating and tremulous agitation, of grief. As this kind of imitation is the noblest effort of music, it is astonishing that it should have been overlooked by M. D'Alembert. He has indeed apologized, by informing us, that his treatise is merely elementary : but we are uncertain how far this apology ought to be regarded as sufficient, when it is at the same time considered, that he has given an account of imitation in its mechanical, or what Rousseau calls its *technical*,

Imitation *technical*; sense; which, however, to prevent ambiguity, we should rather choose to call *mimesis*, or *anacrostichos*. To Rousseau's account of the word in this acceptation, we return.

"Imitation (says he), in its technical sense, is a reiteration of the same air, or of one which is similar, in several parts where it is repeated by one after the other, either in unison, or at the distance of a fourth, a fifth, a third, or any other interval whatever. The imitation may be happily enough pursued even though several notes should be changed; provided the same air may always be recognised, and that the composer does not deviate from the laws of proper modulation. Frequently, in order to render the imitation more sensible, it is preceded by a general rest, or by long notes which seem to obliterate the impression formerly made by the air till it is renewed with greater force and vivacity by the commencement of the imitation. The imitation may be treated as the composer chooses; it may be abandoned, resumed, or another begun, at pleasure; in a word, its rules are as much relaxed as those of the fugue are severe: for this reason, it is despised by the most eminent masters; and every imitation of this kind too much affected, almost always betrays a novice in composition."

IMITATION, in oratory, is an endeavour to resemble a speaker or writer in those qualities with regard to which we propose them to ourselves as patterns. The first historians among the Romans, says Cicero, were very dry and jejune, till they began to imitate the Greeks, and then they became their rivals. It is well known how closely Virgil has imitated Homer in his *Æneid*, Hesiod in his *Georgics*, and Theocritus in his *Eclogues*. Terence copied after Menander; and Plautus after Epicarmus, as we learn from Horace, lib. ii. ep. ad August. who himself owes many of his beauties to the Greek lyric poets. Cicero appears, from many passages in his writings, to have imitated the Greek orators. Thus Quintilian says of him, that he has expressed the strength and sublimity of Demosthenes, the copiousness of Plato, and the delicacy of Isocrates.

IMMACULATE, something without stain, chiefly applied to the conception of the holy Virgin. See *CONCEPTION Immaculate*.

IMMATERIAL, something devoid of matter, or that is pure spirit. See *METAPHYSICS*.

IMMEDIATE, whatever is capable of producing an effect without the intervention of external means; thus we say, an immediate cause, in opposition to a mediate or remote one.

IMMEMORIAL, an epithet given to the time or duration of any thing whose beginning we know nothing of.

In a legal sense, a thing is said to be of *time immemorial*, or *time out of mind*, that was before the reign of our king Edward II.

IMMENSITY, an unlimited extension, or which no finite and determinate space, repeated ever so often, can equal.

IMMER, the most easterly island of all the New Hebrides in the South Sea. It lies about four leagues from *TANNA*, and seems to be about five leagues in circumference; it is of a considerable height, with a flat-top.

No 164.

IMMERETTA, or **IMERETIA**. See **IMERETIA**. **IMMERSETTA**, that act by which any thing is plunged into water or other fluid.

It is used in chemistry for a species of calcination, when any body is immersed in a fluid to be corroded; or it is a species of lotion; as when a substance is plunged into any fluid, in order to deprive it of a bad quality, or communicate to it a good one.

IMMERISION, in astronomy, is when a star or planet is so near the sun with regard to our observations, that we cannot see it; being, as it were, enveloped and hid in the rays of that luminary. It also denotes the beginning of an eclipse of the moon, or that moment when the moon begins to be darkened, and to enter into the shadow of the earth.

IMMOLATION, a ceremony used in the Roman sacrifices; it consisted in throwing upon the head of the victim some sort of corn and frankincense, together with the *mola* or salt cake, and a little wine.

IMMORTAL, that which will last to all eternity, as having in it no principle of alteration or corruption.

IMMUNITY, a privilege or exemption from some office, duty, or imposition, as an exemption from tolls, &c.

Immunity is more particularly understood of the liberties granted to cities and communities.

IMMUTABILITY, the condition of a thing that cannot change. Immutability is one of the divine attributes. See *GOD*.

IMOLA, a town of Italy, in the territory of the church, and in Romagna, with a bishop's see. It is a very handsome populous place; and is seated on the river Santerno, in E. Long. 11. 43. N. Lat. 44. 28.

IMPALE, in heraldry, is to conjoin two coats of arms pale-wise. Women impale their coats of arms with those of their husbands. See *HERALDRY*.

To impale cities, camps, fortifications, &c. is to inclose them with pallisadoes.

To **IMPALE**, or **Empale**, signifies also to put to death by spitting on a stake fixed upright.

IMPALPABLE, that whose parts are so extremely minute, that they cannot be distinguished by the senses, particularly by that of feeling.

IMPANATION, a term used by divines to signify the opinion of the Lutherans with regard to the eucharist, who believe that the species of bread and wine remain together with the body of our Saviour after consecration.

IMPANELLING, in law, signifies the writing down or entering into a parchment, list, or schedule, the names of a jury summoned by the sheriff to appear for such public services as juries are employed in.

IMPARLANCE, in law, a petition in court for a day to consider or advise what answer the defendant shall make to the plaintiff's action; and is the continuance of the cause till another day, or a longer time given by the court.

IMPASSIBLE, that which is exempt from suffering; or which cannot undergo pain, or alteration. The Stoics place the soul of their wise man in an impassible, imperturbable state. See *APATHY*.

IMPASTATION, the mixture of various materials of different colours and consistencies, baked or bound

Impedens together with some cement, and hardened either by the air or by fire.

Impeccability.

IMPATIENS, *touch-me-not*, and *Balsamine*: A genus of the monogamia order, belonging to the syngenesia class of plants; and in the natural method ranking under the 24th order, *Corydalis*. The calyx is diphyllous; the corolla pentapetalous, and irregular, with an hooded nectarium; the capsule superior and quinquevalved.

Species. 1. The *noli-me-tangere*, or common yellow balsamine, is a native of Britain, but is cultivated in many gardens for curiosity. It hath a fibrous root, an upright, jointed, succulent, stalk, about 18 inches high, with alternate oval leaves; and, from the axillae of the stalks, long, slender, branching footstalks, each sustaining many yellow flowers; succeeded by taper capsules, that burst open and dart forth their seeds with great velocity, whence its name. 2. The *balsamina*, or balsam, is a native of India. It hath a fibrous root, an upright, thick, succulent stalk, branching all around a foot and an half or two feet high; with long, spear-shaped, sawed leaves, the upper ones alternate; and from the joints of the stalk and branches clusters of short foot-stalks, each sustaining one large irregular flower, of different colours in the varieties; flowering from June or July till September.

Culture. The first species is very hardy, and will grow freely from the seeds in any common border; but the second requires artificial warmth. The seeds will indeed grow in the full ground, but rarely before the month of May; and more freely then, if covered with a hand-glass, &c. But the plants raised by artificial heat will flower five or six weeks sooner than those raised in the natural ground. The seeds ought therefore always to be sowed on a hot-bed in March or April, and the plants continued therein till June; and if the frames be deep, they will then be drawn up to the length of two or three feet; after which they may be planted in pots, which must likewise be continued in the hot-bed till the plants have taken fresh root.

IMPEACHMENT, an accusation and prosecution for treason and other crimes and misdemeanors. Any member of the lower house of parliament may impeach any one belonging either to that body or to the house of lords. The method of proceeding is to exhibit articles on the behalf of the commons, by whom managers are appointed to make good their charge. These articles are carried to the lords, by whom every person impeached by the commons is always tried; and if they find him guilty, no pardon under the great seal can be pleaded to such an impeachment. 12 Will. III. cap. ii.

IMPECCABILES, in church history, a name given to those heretics who boasted that they were impeccable, and that there was no need of repentance: such were the Gnostics, Priscillianists, &c.

IMPECCABILITY, the state of a person who cannot sin: or a grace, privilege, or principle, which puts him out of a possibility of sinning.

The schoolmen distinguish several kinds and degrees of impeccability: that of God belongs to him by nature: that of Jesus Christ, considered as man, belongs to him by the hypostatical union: that of the blessed is a consequence of their condition: that of men is the effect of a confirmation in grace, and is rather

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called *impeccance* than *impeccability*; accordingly divines distinguish between these two: this distinction is found necessary in the disputes against the Pelagians, in order to explain certain terms in the Greek and Latin fathers, which without this distinction are easily confounded.

IMPEDIMENTS, in law, are such hindrances as put a stop or stay to a person's seeking for his right by a due course of law. Persons under impediments are those under age or coverture, *non compos mentis*, in prison, beyond sea, &c. who, by a saving in our laws, have time to claim and prosecute their rights, after the impediments are removed, in case of fines levied, &c.

IMPENETRABILITY, in philosophy, that property of body, whereby it cannot be pierced by another: thus, a body which so fills a space as to exclude all others, is said to be impenetrable.

IMPERATIVE, one of the moods of a verb, used when we would command, intreat, or advise: thus, *go read, take pity, be advised*, are imperatives in our language. But in the learned languages, this mood has a peculiar termination to distinguish it from others, as *i*, or *ito*, "go;" *lege*, or *legito*, "read," &c. and not only so, but the termination varies, according as you address one or more persons, as *audi* and *audite*; *auxilio*, *auxilior*, *auxiliorum*, &c.

IMPERATOR, in Roman antiquity, a title of honour conferred on victorious generals by their armies, and afterwards confirmed by the senate.

Imperator was also the title adopted by the Roman emperors.

IMPERATORIA, *MASTERWORT*: A genus of the digynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 45th order, *Umbellata*. The fruit is roundish, compressed in the middle, gibbous, and surrounded with a border; the petals are inflexo-emarginated. There is but one species, *viz.* the *ostruthium*, a native of the Austrian and Styrian Alps, and other mountainous places of Italy. Mr Lightfoot informs us, that he has found it in several places on the banks of the Clyde in Scotland; but whether indigenous or not, is uncertain. The root is as thick as a man's thumb, running obliquely in the ground; it is fleshy, aromatic, and has a strong acrid taste, biting the tongue like pellitory of Spain: the leaves arise immediately from the root; they have long foot-stalks, dividing into three very short ones at the top, each sustaining a trilobate leaf, indented on the border. The footstalks are deeply channelled, and, when broken, emit a rank odour. The flower-stalks rise about two feet high, dividing into two or three branches, each being terminated by a pretty large umbel of white flowers whose petals are split; these are succeeded by oval compressed seeds, somewhat like those of dill, but larger.—The plant is cultivated in gardens for the sake of its roots, which are used in medicine. It may be propagated either by seeds, or by parting the roots in autumn. They thrive best in a shady situation.—The root has a flavour similar to that of angelica, and is esteemed a good sudorific. There are instances of its having cured the ague when the bark had failed. It should be dug up in winter, and a strong infusion made in wine.

IMPERFECT, something that is defective, or that

X

wants

Imperfect wants some of the properties found in other beings of the same kind.

Implication.

IMPERFECT Tense, in grammar, a tense that denotes some preterite case, or denotes the thing to be at that time present, and not quite finished; as *scribam*, "I was writing." See **GRAMMAR**.

IMPERIAL, something belonging to an emperor, or empire. See **EMPEROR** and **EMPIRE**.—Thus we say, his *imperial* majesty, the *imperial* crown, *imperial* arms, &c.

IMPERIAL Crown. See **HERALDRY**, p. 462.

IMPERIAL Chamber, is a sovereign court, established for the affairs of the immediate states of the empire. See **CHAMBER**, and **GERMANY**.

IMPERIAL Cities, in Germany, are those which own no other head but the emperor.

These are a kind of little commonwealths; the chief magistrate whereof does homage to the emperor, but in other respects, and in the administration of justice, is sovereign.

Imperial cities have a right of coining money, and of keeping forces and fortified places. Their deputies assist at the imperial diets, where they are divided into two branches, that of the Rhine and that of Suabia. There were formerly 22 in the former and 37 in the latter; but there are now only 48 in all.

IMPERIAL Diet, is an assembly or convention of all the states of the empire. See **DIET** and **GERMANY**.

IMPERIALI (John Baptist), a celebrated physician of Vicenza, where he was born in 1568. He composed several esteemed works both in prose and verse, written in good Latin; and died in 1623.

IMPERSONAL VERB, in grammar, a verb to which the nominative of any certain person cannot be prefixed; or, as others define it, a verb destitute of the two first and primary persons, as *deceat*, *oportet*, &c. The impersonal verbs of the active voice end in *t*, and those of the passive in *tur*; they are conjugated thro' the third person singular of almost all the tenses and moods: they want the imperative, instead of which we use the present of the subjunctive; as *peniteat*, *pugnetur*, &c. nor, but a few excepted, are they to be met with in the supines, participles, or gerunds.

IMPERVIOUS, a thing not to be pervaded or passed through, either by reason of the closeness of its pores, or the particular configuration of its parts.

IMPETIGO, in *Medicine*, an extreme roughness and foulness of the skin, attended with an itching and plentiful scurf.

The *impetigo* is a species of dry pruriginous itch, wherein scales or scurf succeed apace; arising from saline corrosive humours thrown out upon the exterior parts of the body, by which means the internal parts are usually relieved.

IMPETRATION, the act of obtaining any thing by request or prayer.

IMPETRATION was more particularly used in our statutes for the pre-obtaining of benefices and church-offices in England from the court of Rome, which did belong to the disposal of the king and other lay patrons of the realm; the penalty whereof is the same with that of provisors, 25 E. III.

IMPETUS, in mechanics, the force with which one body strikes or impels another.

IMPLICATION, in law, is where something is

implied that is not expressed by the parties themselves in their deeds, contracts, or agreements.

ImPLY

To **IMPLY**, or **CARRY**, in *Musick*. These we have used as synonymous terms in that article. They are intended to signify those sounds which ought to be the proper concomitants of any note, whether by its own nature, or by its position in artificial harmony. Thus every note, considered as an independent sound, may be said to *carry* or *imply* its natural harmonics, that is to say, its octave, its twelfth, and its seventeenth; or, when reduced, its eighth, its fifth, and its third. But the same sound, when considered as constituting any part of harmony, is subjected to other laws and different limitations. It can then only be said to *carry* or *imply* such simple sounds, or complications of sound, as the preceding and subsequent chords admit or require. For these the laws of melody and harmony must be consulted. See **MELODY** and **HARMONY**.

Impossible

IMPORTATION, in commerce, the bringing merchandise into a kingdom from foreign countries; in contradistinction to exportation. See **EXPORTATION**.

For the principal laws relating to importation, see *Custom-house Laws*.

IMPOSITION of hands, an ecclesiastical action by which a bishop lays his hand on the head of a person, in ordination, confirmation, or in uttering a blessing. This practice is also frequently observed by the dissenters at the ordination of their ministers, when all the ministers present place their hands on the head of him whom they are ordaining, while one of them prays for a blessing on him and his future labours. This some of them retain as an ancient practice, justified by the example of the apostles, when no extraordinary gifts are conveyed. However, they are not agreed as to the propriety of this ceremony; nor do they consider it as an essential part of ordination.

Imposition of hands was a Jewish ceremony, introduced not by any divine authority, but by custom; it being the practice among those people whenever they prayed to God for any person to lay their hands on his head.

Our Saviour observed the same custom, both when he conferred his blessing on children and when he cured the sick; adding prayer to the ceremony. The apostles likewise laid hands on those upon whom they bestowed the Holy Ghost.—The priests observed the same custom when any one was received into their body.—And the apostles themselves underwent the imposition of hands afresh every time they entered upon any new design. In the ancient church imposition of hands was even practised on persons when they married, which custom the Abyssinians still observe.

IMPOSSIBLE, that which is not possible, or which cannot be done or effected. A proposition is said to be impossible, when it contains two ideas which mutually destroy each other, and which can neither be conceived nor united together. Thus it is impossible that a circle should be a square; because we conceive clearly that squareness and roundness destroy each other by the contrariety of their figure.

There are two kinds of impossibilities, *physical* and *moral*.

Physical

Impost
Impotency.

Physical impossibility is that which is contrary to the law of nature.

A thing is morally impossible, when of its own nature it is possible, but yet is attended with such difficulties, as that, all things considered, it appears impossible. Thus it is morally impossible that all men should be virtuous; or that a man should throw the same number with three dice a hundred times successively.

A thing which is impossible in law, is the same with a thing impossible in nature: and if any thing in a bond or deed be impossible to be done, such deed, &c. is void. 21 Car. I.

IMPOST, in law, signifies in general a tribute or custom, but is more particularly applied to signify that tax which the crown receives for merchandises imported into any port or haven.

IMPOSTHUME, or abscess, a collection of matter or pus in any part of the body, either owing to an obstruction of the fluids in that part which makes them change into such matter, or to a translation of it from some other part where it was generated. See **SURGERY**.

IMPOSTOR, in a general sense, denotes a person who cheats by a fictitious character.

Religious IMPOSTORS, are such as falsely pretend to an extraordinary commission from heaven; and who terrify and abuse the people with false denunciations of judgments. These are punishable in the temporal courts with fine, imprisonment, and infamous corporal punishment.

IMPOTENCE, or **IMPOTENCY**, in general, denotes want of strength, power, or means, to perform any thing.

Divines and philosophers distinguish two sorts of impotency; natural and moral. The first is a want of some physical principle, necessary to an action; or where a being is absolutely defective, or not free and at liberty to act: The second only imports a great difficulty; as a strong habit to the contrary, a violent passion, or the like.

IMPOTENCY is a term more particularly used for a natural inability to coition. Impotence with respect to men is the same as sterility in women; that is, an inability of propagating the species. There are many causes of impotence; as, a natural defect in the organs of generation, which seldom admits of a cure: accidents or diseases; and in such cases the impotence may or may not be remedied, according as these are curable or otherwise.—The most common causes are, early and immoderate venery, or the venereal disease. We have instances, however, of unsuitness for generation in men by an impediment to the ejection of the semen in coition, from a wrong direction which the orifice at the *verumontanum* got, whereby the seed was thrown up into the bladder. M. Petit cured one patient under such a difficulty of emission, by making an incision like to that commonly made in the great operation for the stone.

On this subject we have some curious and original observations by the late Mr John Hunter in his *Treatise on the Venereal Disease**. He considers impotency as depending upon two causes. One he refers to the mind; the other to the organs.

1. *As to impotency depending upon the mind*, he observes, *Impotency*, that as the "parts of generation are not necessary for the existence or support of the individual, but have a reference to something else in which the mind has a principal concern; so a complete action in those parts cannot take place without a perfect harmony of body and of mind: that is, there must be both a power of body and disposition of mind; for the mind is subject to a thousand caprices, which affect the actions of these parts.

"Copulation is an act of the body, the spring of which is in the mind; but it is not volition: and according to the state of the mind, so is the act performed. To perform this act well, the body should be in health, and the mind should be perfectly confident of the powers of the body: the mind should be in a state entirely disengaged from every thing else: it should have no difficulties, no fears, no apprehensions, not even an anxiety to perform the act well; for even this anxiety is a state of mind different from what should prevail; there should not be even a fear that the mind itself may find a difficulty at the time the act should be performed. Perhaps no function of the machine depends so much upon the state of the mind as this.

"The will and reasoning faculty have nothing to do with this power; they are only employed in the act, so far as voluntary parts are made use of: and if they ever interfere, which they sometimes do, it often produces another state of mind which destroys that which is proper for the performance of the act; it produces a desire, a wish, a hope, which are all only diffidence and uncertainty, and create in the mind the idea of a possibility of the want of success, which destroys the proper state of mind or necessary confidence.

"There is perhaps no act in which a man feels himself more interested, or is more anxious to perform well; his pride being engaged in some degree, which if within certain bounds would produce a degree of perfection in an act depending upon the will, or an act in voluntary parts; but when it produces a state of mind contrary to that state on which the perfection of the act depends, a failure must be the consequence.

"The body is not only rendered incapable of performing this act by the mind being under the above influence, but also by the mind being, tho' perfectly confident of its power, yet conscious of an impropriety in performing it; this, in many cases, produces a state of mind which shall take away all power. The state of a man's mind respecting his sister takes away all power. A conscientious man has been known to lose his powers on finding the woman he was going to be connected with unexpectedly a virgin.

"Shedding tears arises entirely from the state of the mind, although not so much a compound action as the act in question; for none are so weak in body that they cannot shed tears: it is not so much a compound action of the mind and strength of body joined, as the other act is; yet if we are afraid of shedding tears, or are desirous of doing it, and that anxiety is kept up through the whole of an affecting scene, we certainly shall not shed tears, or at least not so freely as would have happened from our natural feelings.

"From this account of the necessity of having the
mind

X 2

* P. 201,
&c. 2d edit.

Impotency. mind independent respecting the act, we must see that it may very often happen that the state of mind will be such as not to allow the animal to exert its natural powers; and every failure increases the evil. We must also see from this state of the case, that this act must be often interrupted; and the true cause of this interruption not being known, it will be laid to the charge of the body or want of powers. As these cases do not arise from real inability, they are to be carefully distinguished from such as do; and perhaps the only way to distinguish them is, to examine into the state of mind respecting this act. So trifling often is the circumstance which shall produce this inability depending on the mind, that the very desire to please shall have that effect, as in making the woman the sole object to be gratified.

"Cases of this kind we see every day; one of which I shall relate as an illustration of this subject, and also of the method of cure.—A gentleman told me, that he had lost his virility. After above an hour's investigation of the case, I made out the following facts: that he had at unnecessary times strong erections, which showed that he had naturally this power; that the erections were accompanied with desire, which are all the natural powers wanted; but that there was still a defect somewhere, which I supposed to be from the mind. I inquired if all women were alike to him? his answer was, No; some women he could have connection with as well as ever. This brought the defect, whatever it was, into a smaller compass: and it appeared there was but one woman that produced this inability, and that it arose from a desire to perform the act with this woman well; which desire produced in the mind a doubt or fear of the want of success, which was the cause of the inability of performing the act. As this arose entirely from the state of the mind produced by a particular circumstance, the mind was to be applied to for the cure; and I told him that he might be cured, if he could perfectly rely on his own power of self-denial. When I explained what I meant, he told me that he could depend upon every act of his will or resolution. I then told him, that, if he had a perfect confidence in himself in that respect, he was to go to bed to this woman, but first promise to himself that he would not have any connection with her for six nights, let his inclinations and powers be what they would; which he engaged to do; and also to let me know the result. About a fortnight after, he told me, that this resolution had produced such a total alteration in the state of his mind, that the power soon took place; for instead of going to bed with the fear of inability, he went with fears that he should be possessed with too much desire, too much power, so as to become uneasy to him: which really happened; for he would have been happy to have shortened the time; and when he had once broke the spell, the mind and powers went on together, and his mind never returned to its former state."

2. *Of impotency from a want of proper correspondence between the actions of the different organs.* Our author, in a former part of his Treatise, when considering the diseases of the urethra and bladder, had remarked, that every organ in an animal body, without exception, was made up of different parts, whose functions or actions were totally different from one another, al-

though all tending to produce one ultimate effect. In **Impotency**, all such organs when perfect (he observes), there is a succession of motions, one naturally arising out of the other, which in the end produces the ultimate effect; and an irregularity alone in these actions will constitute disease, at least will produce very disagreeable effects, and often totally frustrate the intention of the organ. This principle Mr Hunter, on the present occasion, applies to the "actions of the testicles and penis: for we find that an irregularity in the actions of these parts sometimes happen in men, producing impotency; and something similar probably may be one cause of barrenness in women.

"In men, the parts subservient to generation may be divided into two; the essential, and the accessory. The testicles are the essential; the penis, &c. the accessory. As this division arises from their uses or actions in health, which exactly correspond with one another, a want of exactness in the correspondence or susceptibility of those actions may also be divided into two: where the actions are reversed, the accessory taking place without the first or essential, as in erections of the penis, where neither the mind nor the testicles are stimulated to action; and the second is where the testicles performs the action of secretion too readily for the penis, which has not a corresponding erection. The first is called *priapism*; and the second is what ought to be called *seminal weakness*.

"The mind has considerable effect on the correspondence of the actions of these two parts: but it would appear in many instances, that erections of the penis depend more on the state of the mind than the secretion of the semen does; for many have the secretion, but not the erection; but in such, the want of erection appears to be owing to the mind only.

"Priapism often arises spontaneously; and often from visible irritation of the penis, as in the venereal gonorrhœa, especially when violent. The sensation of such erections is rather uneasy than pleasant; nor is the sensation of the glans at the time similar to that arising from the erections of desire, but more like to the sensation of the parts immediately after coition. Such as arise spontaneously are of more serious consequence than those from inflammation, as they proceed probably from causes not curable in themselves or by any known methods. The priapism arising from inflammation of the parts, as in a gonorrhœa, is attended with nearly the same symptoms; but generally the sensation is that of pain, proceeding from the inflammation of the parts. It may be observed, that what is said of priapism is only applicable to it when a disease in itself, and not when a symptom of other diseases, which is frequently the case.

"The common practice in the cure of this complaint is to order all the nervous and strengthening medicines; such as bark, valerian, musk, camphor, and also the cold bath. I have seen good effects from the cold bath; but sometimes it does not agree with the constitution, in which case I have found the warm bath of service. Opium appears to be a specific in many cases; from which circumstance I should be apt, upon the whole, to try a soothing plan.

"Seminal weakness, or a secretion and emission of the semen without erections, is the reverse of a priapism, and is by much the worst disease of the two.

There-

Impotency. There is great variety in the degrees of this disease, there being all the gradations from the exact correspondence of the actions of all the parts to the testicles acting alone; in every case of the disease, there is too quick a secretion and evacuation of the semen. Like to the priapism, it does not arise from desires and abilities; although when mild it is attended with both, but not in a due proportion; a very slight desire often producing the full effect. The secretion of the semen shall be so quick, that simple thought, or even toying, shall make it flow.

"Dreams have produced this evacuation repeatedly in the same night; and even when the dreams have been so slight, that there has been no consciousness of them when the sleep has been broken by the act of emission. I have known cases where the testicles have been so ready to secrete, that the least friction on the glans has produced an emission: I have known the simple action of walking or riding produce this effect, and that repeatedly, in a very short space of time.

"A young man, about four or five and twenty years of age, not so much given to venery as most young men, had these last mentioned complaints upon him. Three or four times in the night he would emit; and if he walked fast, or rode on horseback, the same thing would happen. He could scarcely have connection with a woman before he emitted, and in the emission there was hardly any spasm. He tried every supposed strengthening medicine, as also the cold bath and sea-bathing, but with no effect. By taking 20 drops of laudanum on going to bed, he prevented the night emissions; and by taking the same quantity in the morning, he could walk or ride without the before mentioned inconvenience. I directed this practice to be continued for some time, although the disease did not return, that the parts might be accustomed to this healthy state of action; and I have reason to believe the gentleman is now well. It was found necessary, as the constitution became more habituated to the opiate, to increase the dose of it.

"The spasms, upon the evacuation of the semen in such cases, are extremely slight, and a repetition of them soon takes place; the first emission not preventing a second; the constitution being all the time but little affected (A). When the testicles act alone, without the accessory parts taking up the necessary and natural consequent action, it is still a more melancholy disease; for the secretion arises from no visible or sensible cause, and does not give any visible or sensible effect, but runs off similar to involuntary stools or urine. It has been observed that the semen is more fluid than natural in some of these cases.

"There is great variety in the diseased actions of these parts: of which the following case may be considered as an example. A gentleman has had a stricture in the urethra for many years, for which he has frequently used a bougie, but of late has neglected it. He has had no connection with women for a considerable time, being afraid of the consequences. He has

often in his sleep involuntary emissions, which generally awake him at the paroxysm; but what surprises him most is, that often he has such without any semen passing forwards through the penis, which makes him think that at those times it goes backwards into the bladder. This is not always the case, for at other times the semen passes forwards. At the time the semen seems to pass into the bladder, he has the erection, the dream; and is awaked with the same mode of action, the same sensation, and the same pleasure, as when it passes through the urethra, whether dreaming or waking. My opinion is, that the same irritation takes place in the bulb of the urethra without the semen, that takes place there when the semen enters, in consequence of all the natural preparatory steps, whereby the very same actions are excited as if it came into the passage: from which one would suppose, that either semen is not secreted; or if it be, that a retrograde motion takes place in the actions of the acceleratores urinæ. But if the first be the case, then we may suppose, that in the natural state the actions of those muscles do not arise simply from the stimulus of the semen in the part, but from their action being a termination of a preceding one making part of a series of actions. Thus they may depend upon the friction, or the imagination of a friction, on the penis; the testicles not doing their part, and the spasm in such cases arising from the friction and not from the secretion. In many of those cases of irregularity, when the erection is not strong, it shall go off without the emission; and at other times an emission shall happen almost without an erection; but these arise not from debility, but affections of the mind.

"In many of the preceding cases, washing the penis, scrotum, and perinæum, with cold water, is often of service; and to render it colder than we find it in some seasons of the year, common salt may be added to it, and the parts washed when the salt is almost dissolved."

IMPOTENCY is a canonical disability, to avoid marriage in the spiritual court. The marriage is not void *ab initio*, but voidable only by sentence of separation during the life of the parties.

IMPRECATION, (derived from *in*. and *precor*, "I pray;") a curse or wish that some evil may befall any one.

The ancients had their goddesses called *Imprecations*, in Latin *Dire*, i. e. *Deorum ira*, who were supposed to be the executioners of evil consciences. They were called *Dire* in heaven, *Furies* on earth, and *Eumenides* in hell. The Romans owned but three of these *Imprecations*, and the Greeks only two. They invoked them with prayers and pieces of verses to destroy their enemies.

IMPREGNATION, the getting a female with a child. See **CONCEPTION**.

The term *impregnation* is also used, in pharmacy, for communicating the virtues of one medicine to another, whether by mixture, coction, digestion, &c.

IM-

(A) "It is to be considered, that the constitution is commonly affected by the spasms only, and in proportion to their violence, independent of the secretion and evacuation of the semen. But in some cases even the erection going off without the spasms on the emission, shall produce the same debility as if they had taken place."

Impressing
||
Imprisonment.

IMPRESSING SEAMEN. The power of impressing sea-faring men for the sea-service by the king's commission, has been a matter of some dispute, and submitted to with great reluctance; though it hath very clearly and learnedly been shown by Sir Michael Foster, that the practice of impressing, and granting powers to the admiralty for that purpose, is of very ancient date, and hath been uniformly continued by a regular series of precedents to the present time: whence he concludes it to be part of the common law. The difficulty arises from hence, that no statute has expressly declared this power to be in the crown, though many of them very strongly imply it. The statute 2 Ric. II. c. 4. speaks of mariners being arrested and retained for the king's service, as of a thing well known, and practised without dispute; and provides a remedy against their running away. By a later statute, if any waterman, who uses the river Thames, shall hide himself during the execution of any commission of pressing for the king's service, he is liable to heavy penalties. By another (5 Eliz. c. 5.) no fisherman shall be taken by the queen's commission to serve as a mariner; but the commission shall be first brought to two justices of the peace, inhabiting near the sea-coast where the mariners are to be taken, to the intent that the justices may choose out and return such a number of able-bodied men, as in the commission are contained, to serve her majesty. And by others, especially protections are allowed to seamen in particular circumstances, to prevent them from being impressed. Ferry-men are also said to be privileged from being impressed, at common law. All which do most evidently imply a power of impressing to reside somewhere; and if any where, it must, from the spirit of our constitution, as well as from the frequent mention of the king's commission, reside in the crown alone.—After all, however, this method of manning the navy is to be considered as only defensible from public necessity, to which all private considerations must give way.

The following persons are exempted from being impressed: Apprentices for three years; the master, mate, and carpenter, and one man for every 100 tons, of vessels employed in the coal trade; all under 18 years of age, and above 55; foreigners in merchant-ships and privateers; landmen betaking themselves to sea for two years; seamen in the Greenland fishery, and harpooners, employed, during the interval of the fishing season, in the coal-trade, and giving security to go to the fishing next season.

IMPRESSION is applied to the species of objects which are supposed to make some mark or impression on the senses, the mind, and the memory. The Peripatetics assert, that bodies emit species resembling them, which are conveyed to the common *sensorium*, and they are rendered intelligible by the active intellect; and, when thus spiritualized, are called *expressions*, or *expressed species*, as being expressed from the others.

IMPRESSION also denotes the *edition* of a book, regarding the mechanical part only; whereas *edition*, besides this, takes in the care of the editor, who corrected or augmented the copy, adding notes, &c. to render the work more useful.

IMPRISONMENT, the state of a person restrained of his liberty, and detained under the custody of another.

No person is to be imprisoned but as the law directs, either by the command or order of a court of record, or by lawful warrant; or the king's process, on which one may be lawfully detained. And at common law, a person could not be imprisoned unless he were guilty of some force and violence, for which his body was subject to imprisonment, as one of the highest executions. Where the law gives power to imprison, in such case it is justifiable, provided he that does it in pursuance of a statute exactly pursues the statute in the manner of doing it; for otherwise it will be deemed false imprisonment, and of consequence it is unjustifiable. Every warrant of commitment for imprisoning a person, ought to run, "till delivered by due course of law," and not "until farther order;" which has been held ill: and thus it also is, where one is imprisoned on a warrant not mentioning any cause for which he is committed. See **ARREST** and **COMMITMENT**.

False IMPRISONMENT. Every confinement of the person is an imprisonment, whether it be in a common prison, or in a private house, or in the stocks, or even by forcibly detaining one in the public streets. Unlawful or *false imprisonment*, consists in such confinement or detention without sufficient authority: which authority may arise either from some process from the courts of justice; or from some warrant from a legal power to commit, under his hand and seal, and expressing the cause of such commitment; or from some other special cause warranted, for the necessity of the thing, either by common law or act of parliament; such as the arresting of a felon by a private person without warrant, the impressing of mariners for the public service, or the apprehending of waggoners for misbehaviour in the public highways. False imprisonment also may arise by executing a lawful warrant or process at an unlawful time, as on a Sunday; or in a place privileged from arrests, as in the verge of the king's court. This is the injury. The remedy is of two sorts; the one removing the injury, the other making satisfaction for it.

The means of removing the actual injury of false imprisonment are four-fold, 1. By writ of **MAINPRIZE**. 2. By writ *De Odio et Atia*. 3. By writ *De Homine Replegiando*. 4. By writ of **HABEAS CORPUS**. See those articles.

The *satisfactory* remedy for this injury of false imprisonment, is by an action of trespass *vi et armis*, usually called an *action of false imprisonment*; which is generally, and almost unavoidably, accompanied with a charge of assault and battery also: and therein the party shall recover damages for the injuries he has received; and also the defendant is, as for all other injuries committed with force, or *vi et armis*, liable to pay a fine to the king for the violation of the public peace.

IMPROMPTU, or **INPROMPTU**, a Latin word frequently used among the French, and sometimes in English, to signify a piece made off-hand, or *extempore*, without any previous meditation, by mere force and vivacity of imagination.

IMPROBATION, in Scots law, the name of any action brought for setting any deed or writing aside upon the head of forgery.

IMPROPRIATION, in ecclesiastical law. See **APPROPRIATION**.

IM-

Impurity
||
Inalienable.

IMPURITY, in the law of Moses, is any legal defilement. Of these there were several sorts. Some were voluntary, as the touching a dead body, or any animal that died of itself, or any creature that was esteemed unclean; or the touching things holy, by one who was not clean, or was not a priest; the touching one who had a leprosy, one who had a gonorrhœa, or who was polluted by a dead carcase, &c. Sometimes these impurities were involuntary; as when any one inadvertently touched bones, or a sepulchre, or any thing polluted; or fell into such diseases as pollute, as the leprosy, &c.

The beds, clothes, and moveables, which had touched any thing unclean, contracted also a kind of impurity, and in some cases communicated it to others.

These legal pollutions were generally removed by bathing, and lasted no longer than the evening. The person polluted plunged over head in the water, and either had his clothes on when he did so, or washed himself and his clothes separately. Other pollutions continued seven days, as that which was contracted by touching a dead body. That of women in their monthly courses lasted till this was over with them. Other impurities lasted 40 or 50 days; as that of women who were lately delivered, who were unclean 40 days after the birth of a boy, and 50 after the birth of a girl. Others again lasted till the person was cured.

Many of these pollutions were expiated by sacrifices; and others by a certain water or lye made with the ashes of a red heifer, sacrificed on the great day of expiation. When the leper was cured, he went to the temple, and offered a sacrifice of two birds, one of which was killed and the other set at liberty. He who had touched a dead body, or had been present at a funeral, was to be purified with the water of expiation, and this upon pain of death. The woman who had been delivered, offered a turtle and a lamb for her expiation; or if she was poor, two turtles or two young pigeons.

These impurities, which the law of Moses has expressed with the greatest accuracy and care, were only figures of other more important impurities, such as the sins and iniquities committed against God, or faults committed against our neighbour. The saints and prophets of the Old Testament were sensible of this; and our Saviour, in the gospel, has strongly inculcated, that they are not outward and corporeal pollutions which render us unacceptable to God, but such inward pollutions as infect the soul, and are violations of justice, truth, and charity.

IMPUTATION, in general, the charging some thing to the account of one which belonged to another: thus, the assertors of original sin maintain, that Adam's sin is imputed to all his posterity.

In the same sense, the righteousness and merits of Christ are imputed to true believers.

INACCESSIBLE, something that cannot be come at, or approached, by reason of intervening obstacles, as a river, rock, &c. It is chiefly used in speaking of heights and distances. See **GEOMETRY**.

INACHUS, founder of the kingdom of Argos, 1856 B. C. See **ARGOS**.

INALIENABLE, that which cannot be legally alienated or made over to another: thus the dominions of the king, the revenues of the church, the estates of

a minor, &c. are inalienable, otherwise than with a reserve of the right of redemption.

INANIMATE, a body that has either lost its soul, or that is not of a nature capable of having any.

INANITION, among physicians, denotes the state of the stomach when empty, in opposition to repletion.

INANITY, the school term for emptiness or absolute vacuity, and implies the absence of all body and matter whatsoever, so that nothing remains but mere space.

INARCHING, in gardening, is a method of grafting, commonly called *grafting by approach*; and is used when the stock intended to graft on, and the tree from which the graft is to be taken, stand so near, or can be brought so near, that they may be joined together. The branch to be inarched is to be fitted to that part of the stock where it is to be joined; the rind and wood are to be pared away on one side for the length of three inches, and the stock or branch where the graft is to be united must be served in the same manner, so that the two may join equally and the sap meet. A little tongue is then to be cut upwards in the graft, and a notch made in the stock to admit it; so that when they are joined, the tongue will prevent their slipping, and the graft will more closely unite to the stock. Having thus brought them exactly together, they must be tied with some bafs, or worsted, or other soft tying; and then the place must be covered with some grafting clay, to prevent the air from drying the wound, and the wet from rotting the stock. A stake must be fixed in the ground, to which both the stock and the graft must be tied to prevent the winds from displacing them. When they have remained in this state for four months, they will be sufficiently united, and the graft may then be cut off from the mother-tree, observing to slope it close to the stock; and at this time there should be fresh clay laid all round the part. This operation should be performed in April or May, that the graft may be perfectly united to the stock before the ensuing winter.

Inarching is chiefly practised upon oranges, myrtles, jessamines, walnuts, firs, and some other trees which do not succeed well in the common way of grafting. But it is a wrong practice when orange-trees are designed to grow large, for these are seldom long-lived after the operation.

INAUGURATION, the coronation of an emperor or king, or the consecration of a prelate: so called from the ceremonies used by the Romans, when they were received into the college of augurs.

INCA, or **YNCA**, a name given by the natives of Peru to their kings and the princes of the blood. Pedro de Cieca, in his Chronicles of Peru, gives the origin of the incas; and says, that that country was, for a long time, the theatre of all manner of crimes, of war, dissention, and the most dreadful disorders, till at last two brothers appeared, one of whom was called *Mangocapa*; of this person the Peruvians relate many wonderful stories. He built the city of Cusco, made laws, established order and harmony by his wise regulations; and he and his descendants took the name of *inca*, which signifies king or great lord. These incas became so powerful, that they rendered themselves masters of all the country from Paſto to Chili, and from the

Inanimate
||
Inca.

^{Incarnati-}
^{tion}
^{Incendiary.} the river Maule on the south to the river Augasínago on the north; these two rivers forming the bounds of their empire, which extended above thirteen hundred leagues in length. This they enjoyed till the divisions between Inca Guascar and Atabalipa; which the Spaniards laying hold of, made themselves masters of the country, and destroyed the empire of the incas. See PERU.

INCAMERATION, a term used in the chancery of Rome, for the uniting of lands, revenues, or other rights, to the pope's domain.

INCANTATION, denotes certain ceremonies, accompanied with a formula of words, and supposed to be capable of raising devils, spirits, &c. See CHARM, &c.

INCAPACITY, in the canon-law, is of two kinds: 1. The want of a dispensation for age in a minor, for legitimation in a bastard, and the like: this renders the provision of a benefice void in its original. 2. Crimes and heinous offences, which annul provisions at first valid.

INCARNATION, in theology, signifies the act whereby the Son of God assumed the human nature; or the mystery by which Jesus Christ, the eternal word, was made man, in order to accomplish the work of our salvation. The era used among Christians, whence they number their years, is the time of the incarnation, that is, of Christ's conception in the virgin's womb.

This era was first established by Dionysius Exiguus, about the beginning of the sixth century, till which time the era of Dioclesian had been in use.

Some time after this, it was considered, that the years of a man's life were not numbered from the time of his conception, but from that of his birth: which occasioned them to postpone the beginning of this era for the space of one year, retaining the cycle of Dionysius entire in every thing else.

At Rome they reckon their years from the incarnation or birth of Christ, that is, from the 25th of December, which custom has obtained from the year 1431. In France, and several other countries, they also reckon from the incarnation: but then they differ from each other in the day of the incarnation, fixing it, after the primitive manner, not to the day of the birth, but conception of our Saviour. Though the Florentines retain the day of the birth, and begin their year from Christmas.

INCARNATION (formed from *in*, and *caro* 'flesh'), in surgery, signifies the healing and filling up of ulcers and wounds with new flesh. See SURGERY.

INCARNATIVES, in surgery, medicines which assist nature in filling up wounds or ulcers with flesh; or rather remove the obstructions thereto.

INCENDIARY, in law, is applied to one who is guilty of maliciously setting fire to another's dwelling-house, and all out-houses that are parcel thereof, though not contiguous to it or under the same roof, as barns and stables. A bare intent or attempt to do this, by actually setting fire to a house, unless it absolutely burns, does not fall within the description of *incendit et combussit*. But the burning and consuming of any part is sufficient; though the fire be afterwards extinguished. It must also be a malicious burning; No 165.

otherwise it is only a trespass. This offence is called *arson* in our law. ^{Incendi}
^{Incend.}

Among the ancients, criminals of this kind were to be burnt. *Qui ades, acervumque frumenti juxta domum positum sciens, prudensque dolo malo combusserit, vinclis igni necatur.*

The punishment of *arson* was death by our ancient Saxon laws and by the Gothic constitutions: and in the reign of Edward I. incendiaries were burnt to death. The stat. 8 Hen. VI. c. 6. made the wilful burning of houses, under special circumstances, high treason; but it was reduced to felony by the general acts of Edward VI. and Queen Mary. This offence was denied the benefit of clergy by 21 Hen. VIII. c. 1. which statute was repealed by 1 Edw. VI. c. 12; and arson was held to be ousted of clergy, with respect to the principal, by inference from the stat. 4 and 5 P. and M. c. 4. which expressly denied it to the accessory; though now it is expressly denied to the principal also, by 9 Geo. I. c. 22.

INCENSE, or FRANKINCENSE, in the materia medica, &c. a dry resinous substance, known among authors by the names *THUS* and *OLIBANUM*.

Incense is a rich perfume, with which the Pagans, and the Roman-Catholics still, perfume their temples, altars, &c.—The word comes from the Latin *incensum*, q. d. *burnt*; as taking the effect for the thing itself.

The burning of incense made part of the daily service of the ancient Jewish church. The priests drew lots to know who should offer it: the destined person took a large silver dish, in which was a censor full of incense; and being accompanied by another priest carrying some live coals from the altar, went into the temple. There, in order to give notice to the people, they struck upon an instrument of brass placed between the temple and the altar; and being returned to the altar, he who brought the fire left it there, and went away. Then the offerer of incense having said a prayer or two, waited the signal, which was the burning of the holocaust; immediately upon which he set fire to the incense, the whole multitude continuing all the time in prayer. The quantity of incense offered each day was half a pound in the morning and as much at night.

One reason of this continual burning of incense might be, that the multitude of victims that were continually offered up, would have made the temple smell like a slaughter-house, and consequently have inspired the comers rather with disgust and aversion, than awe and reverence, had it not been overpowered by the agreeable fragrance of those perfumes.

INCEPTIVE, a word used by Dr Wallis to express such moments, or first principles, which, though of no magnitude themselves, are yet capable of producing such as are. Thus a point has no magnitude itself, but is inceptive of a line which it produces by its motion. So a line, though it have no breadth, is yet inceptive of breadth; that is, it is capable, by its motion, of producing a surface which has breadth, &c.

INCEST, the crime of venereal commerce between persons who are related in a degree wherein marriage is prohibited by the law of the country.

Some are of opinion, that marriage ought to be permitted between kinsfolks, to the end that the affection,

Isch.

fection so necessary in marriage might be heightened by this double tie: yet the rules of the church have formerly extended this prohibition even to the seventh degree; but time has now brought it down to the third or fourth degree.

Most nations look on incest with horror, Persia and Egypt alone excepted. In the history of the ancient kings of those countries we meet with instances of the brother's marrying the sister; the reason was, because they thought it too mean to join in alliance with their own subjects, and still more so to have married into any foreign family.

INCEST Spiritual, a crime committed in like manner between persons who have a spiritual alliance by means of baptism or confirmation.

Spiritual incest is also understood of a vicar, or other beneficiary, who enjoys both the mother and daughter; that is, holds two benefices, the one whereof depends upon the collation of the other.

Such a spiritual incest renders both the one and the other of these benefices vacant.

INCH, a well-known measure of length; being the twelfth part of a foot, and equal to three barley-corns in length.

INCH of Candle, (sale by). See CANDLE.

INCH (contracted from the Gaelic *innis* "an island"), a word prefixed to the names of different places in Scotland and Ireland.

INCH-Cole or *Columba*, the isle of Columba, an island situated on the frith of Forth in Scotland, and famous for its monastery. See FORTH.

This monastery was founded about 1123, by Alexander I. on the following occasion. In passing the frith of Forth he was overtaken with a violent storm, which drove him to this island, where he met with the most hospitable reception from a poor hermit, then residing here in the chapel of St Columba, who, for the three days that the king continued there tempest-bound, entertained him with the milk of his cow, and a few shell-fish. His majesty, from the sense of the danger he had escaped, and in gratitude to the saint to whom he attributed his safety, vowed some token of respect; and accordingly founded here a monastery of Augustines, and dedicated it to St Columba. Allan de Mortimer, lord of Aberdour, who attended Edward III. in his Scotch expedition, bestowed half of those lands on the monks of this island, for the privilege of a family burial-place in their church.—The buildings made in consequence of the piety of Alexander were very considerable. There are still to be seen a large square tower belonging to the church, the ruins of the church, and of several other buildings. The wealth of this place in the time of Edward III. proved so strong a temptation to his fleet, then lying in the Forth, as to suppress all the horror of sacrilege and respect to the sanctity of the inhabitants. The English landed, and spared not even the furniture more immediately consecrated to divine worship. But due vengeance overtook them; for in a storm which instantly followed, many of them perished; those who escaped, struck with the justice of the judgment, vowed to make ample recompence to the injured saint. The tempest ceased; and they made the promised atonement.—The Danish monument, figured by Sir Robert Sibbald, lies on the south-east side of the building, on a rising ground. It is of a rigid

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form, and the surface ornamented with scale-like figures. At each end is the representation of a human head.

INCH-Keith, a small island situated in the same frith, midway between the port of Leith and Kinghorn on the opposite shore. See FORTH.

This island is said to derive its name from the gallant Keith who so greatly signalized himself by his valour in 1010, in the battle of Barry, in Angus, against the Danes; after which he received in reward the barony of Keith, in Lothian, and this little isle. In 1549 the English fleet, sent by Edward VI. to assist the lords of the congregation against the queen-dowager, landed, and began to fortify this island, of the importance of which they grew sensible after their neglect of securing the port of Leith, so lately in their power. They left here five companies to cover the workmen under the command of Cotterel; but their operations were soon interrupted by M. Desse, general of the French auxiliaries, who took the place, after a gallant defence on the part of the English. The Scots kept possession for some years; but at last the fortifications were destroyed by act of parliament, to prevent it from being of any use to the former. The French gave it the name of *L'isle des chevaux*, from its property of soon fattening horses.—In 1497, by order of council, all venereal patients in the neighbourhood of the capital were transported there, *ne quid detrimenti respublica caperet*.

INCH-Garvie, a small island, also lying in the frith of Forth. See FORTH.

INCHANTMENT. See WITCHCRAFT.

INCHOATIVE, a term signifying the beginning of a thing or action; the same with what is otherwise called *inceptive*.

INCHOATIVE verbs, denote, according to Priscian and other grammarians, verbs that are characterized by the termination *scio* or *scor*, added to their primitives: as *augeo* from *augeo*, *caleo* from *caleo*, *dulcesco* from *dulcis*, *irascor* from *ira*, &c.

INCIDENCE, denotes the direction in which one body strikes on another. See OPTICS and MECHANICS.

Angle of INCIDENCE. See ANGLE.

INCIDENT, in a general sense, denotes an event, or a particular circumstance of some event.

INCIDENT, in law, is a thing appertaining to, or following another, that is more worthy or principal. A court-baron is inseparably incident to a manor; and a court of pie-powders to a fair.

INCIDENT diligence, in Scots law, a warrant granted by a lord ordinary in the court of session, for citing witnesses for proving any point, or for production of any writing necessary for preparing the cause for a final determination, or before it goes to a general proof.

INCIDENT, in a poem, is an episode, or particular action, joined to the principal action, or depending on it.

A good comedy is to be full of agreeable incidents, which divert the spectators, and form the intrigue. The poet ought always to make choice of such incidents as are susceptible of ornament suitable to the nature of his poem. The variety of incidents well conducted makes the beauty of an heroic poem, which ought always to take in a certain number of incidents

Y

to

Isch.

Incidents

Incineration
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Incontinence.

to suspend the catastrophe, that would otherwise break out too soon.

INCINERATION, (derived from *in*, and *cinis*, "ashes,") in Chemistry, the reduction of vegetables into ashes, by burning them gently.

INCISIVE, an appellation given to whatever cuts or divides: thus, the foreteeth are called *dentes incisivi*, or cutters; and medicines of an attenuating nature, incidents, or incisive medicines.

INCLE, a kind of tape made of linen yarn.

INCLINATION, is a word frequently used by mathematicians, and signifies the mutual approach, tendency, or leaning of two lines or two planes towards each other, so as to make an angle.

INCLINATION in a moral sense. See **APPETITE**.

INCLINED PLANE, in mechanics, one that makes an oblique angle with the horizon. See **MECHANICS**.

INCOGNITO, or **INCOG**, is applied to a person who is in any place where he would not be known: but it is more particularly applied to princes, or great men, who enter towns, or walk the streets, without their ordinary train or the usual marks of their distinction and quality.

INCOMBUSTIBLE CLOTH. See **ASBESTOS**. On this Cronstedt observes, that the natural store of the asbesti is in proportion to their economical use, both being very inconsiderable. "It is an old tradition (says he), that in former ages they made clothes of the fibrous asbesti, which is said to be composed by the word *byssus*; but it is not very probable, since if one may conclude from some trifles now made of it, as bags, ribbons, and other things, such a dress could neither have an agreeable appearance, nor be of any convenience or advantage. It is more probable that the Scythians dressed their dead bodies, which were to be burned, in a cloth manufactured of this stone; and this perhaps has occasioned the above fable." M. Magellan confirms this opinion of Cronstedt's, and informs us that some of the Romans also inclosed dead bodies in cloth of this kind. In the year 1756 or 1757 he tells us, that he saw a large piece of asbestos cloth found in a stone tomb, with the ashes of a Roman, as appeared by the epitaph. It was kept, with the tomb also, if our author remembers rightly, in the right-hand wing of the Vatican library at Rome. The under-librarian, in order to show that it was incombustible, lighted a candle, and let some drops of wax fall on the cloth, which he set on fire with a candle in his presence without any detriment to the cloth. Its texture was coarse, but much softer than he could have expected.

INCOMBUSTIBLE, something that cannot be burnt or consumed by fire. See **ASBESTOS**.

INCOMMENSURABLE, a term in geometry, used where two lines, when compared to each other, have no common measure, how small soever, that will exactly measure them both. And in general, two quantities are said to be incommensurable, when no third quantity can be found that is an aliquot part of both.

INCOMMENSURABLE Numbers, are such as have no common divisor that will divide them both equally.

INCOMPATIBLE, that which cannot subsist with another without destroying it: thus cold and heat are incompatible in the same subject, the strongest overcoming and expelling the weakest.

INCONTINENCE, inordinacy of the sexual ap-

petite; lust. It is the opposite of chastity. See **CNAA** **INCONTINENCE** and **CONTINENCE**.

INCONTINENCE, in the eye of law, is of divers kinds; as in cases of bigamy, rapes, sodomy, or buggery, getting bastards; all which are punished by statute. See 25 Hen. VIII. cap. 6. 18 Eliz. cap. 7. 1 Jac. I. cap. 11. Incontinency of priests is punishable by the ordinary, by imprisonment, &c. 1 Hen. VII. cap. 4.

INCONTINENCE, in medicine, signifies an inability in any of the organs to retain what should not be discharged without the concurrence of the will. But incontinence is most frequently used with regard to an involuntary discharge of urine otherwise called *diabetes*. See **MEDICINE-INDEX**.

INCORPORATION, in pharmacy, is much the same as impastation, being a reduction of dry substances to the consistence of a paste, by the admixture of some fluid: thus pills, boles, troches, and plasters, are made by incorporation. Another incorporation is when things of different consistencies are by digestion reduced to one common consistence.

INCORPORATION or *Body-Corporate*. See **CORPORATION**.

INCORPOREAL, spiritual; a thing, or substance, which has no body. Thus the soul of man is incorporeal, and may subsist independent of the body. See **METAPHYSICS**.

INCORRUPTIBLE, that which cannot be corrupted. Thus spiritual substances, as angels, human souls, &c. and thus also glass, gold, mercury, &c. may be called *incorruptible*.

INCORRUPTIBLES, **INCORRUPTIBILES**, the name of a sect which sprang out of the Eutychians.—Their distinguishing tenet was, that the body of Jesus Christ was incorruptible; by which they meant, that after and from the time wherein he was formed in the womb of his holy mother, he was not susceptible of any change or alteration; not even of any natural and innocent passions, as of hunger, thirst, &c. so that he eat without any occasion, before his death, as well as after his resurrection. And hence it was that they took their name.

INCRASSATING, in pharmacy, &c. the rendering of fluids thicker by the mixture of other substances less fluid, or by the evaporation of the thinner parts.

INCUBATION, the action of a hen, or other fowl, brooding on her eggs. See **HATCHING**.

INCUBUS, **NIGHT-MARE**, a disease consisting in an oppression of the breast, so very violent, that the patient cannot speak or even breathe. The word is derived from the Latin *incubare*, to "lie down" on any thing and press it: the Greeks call it *spanthos* q. d. *saluator*, "leaper," or one that rubeth on a person.

In this disease the senses are not quite lost, but drowned and astonished, as is the understanding and imagination; so that the patient seems to think some huge weight thrown on him, ready to strangle him. Children are very liable to this distemper; so are fat people, and men of much study and application of mind; by reason the stomach in all these finds some difficulty in digestion.

INCUMBENT, a clerk or minister who is resident on his benefice; he is called *incumbent*, because he does,

Incontinence
||
Incumbent.

Incurvation or at least ought to, bend his whole study to discharge the cure of his church.

Independents.

INCURVATION of the RAYS of LIGHT, their bending out of a rectilinear straight course, occasioned by refraction. See OPTICS.

INCUS, in anatomy, a bone of the internal ear, somewhat resembling one of the anterior dentes molares. See ANATOMY, no 141.

INDEFEASIBLE, a term in law for what cannot be defeated or made void; as an indefeasible estate of inheritance, &c.

INDEFEASIBLE Right to the Throne. See HEREDITARY Right.

INDEFINITE, that which has no certain bounds, or to which the human mind cannot affix any.

INDEFINITE, in grammar, is understood of nouns, pronouns, verbs, participles, articles, &c. which are left in an uncertain indeterminate sense, and not fixed to any particular time, thing, or other circumstance.

INDELIBLE, something that cannot be cancelled or effaced.

INDEMNITY, in law, the saving harmless; or a writing to secure one from all damage and danger that may ensue from any act.

INDENTED, in heraldry, is when the outline of an ordinary is notched like the teeth of a saw.

INDENTURE, in Law, a writing which comprises some contract between two at least; being indented at top, answerable to another part which has the same contents. See DEED.

Independents.

INDEPENDENTS, a sect of Protestants so called from their maintaining that each congregation of Christians, which meets in one house for publick worship, is a complete church, has sufficient power to act and perform every thing relating to religious government within itself, and is in no respect subject or accountable to other churches.

Their origin.

The Independents, like every other Christian sect, derive their own origin from the practice of the apostles in planting the first churches; but they were unknown in modern times till they arose in England during the reign of Elizabeth. The hierarchy established by that princess in the churches of her dominions, the vestments worn by the clergy in the celebration of divine worship, the book of common prayer, and above all the sign of the cross used in the administration of baptism, were very offensive to many of her subjects, who during the persecutions of the former reign had taken refuge among the Protestants of Germany and Geneva. Those men thought that the church of England resembled, in too many particulars, the antichristian church of Rome; and they called perpetually for a more thorough reformation and a purer worship. From this circumstance they were stigmatized by their adversaries with the general name of *Puritans*, as the followers of Novatian (A) had been in

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the ancient church. Elizabeth was not disposed to comply with their demands; and it is difficult to say what might have been the issue of the contest, had the Puritans been united among themselves in sentiments, views, and measures. But the case was quite otherwise. That large body, composed of persons of different ranks, characters, opinions, and intentions, and unanimous in nothing but in their antipathy to the forms of doctrine and discipline that were established by law, was all of a sudden divided into a variety of sects. Of these the most famous was that which was formed about the year 1581 by *Robert Brown*, a man insinuating in his manners, but unsteady and inconsistent in his views and notions of men and things. See BROWN.

This innovator differed not in point of doctrine either from the church of England or from the rest of the Puritans; but he had formed notions then new and singular, concerning the nature of the church and the rules of ecclesiastical government. He was for dividing the whole body of the faithful into separate societies or congregations; and maintained, that such a number of persons as could be contained in an ordinary place of worship ought to be considered as a church, and enjoy all the rights and privileges that are competent to an ecclesiastical community. These small societies he pronounced *independent*, *jure divino*, and entirely exempt from the jurisdiction of the bishops, in whose hands the court had placed the reins of spiritual government; and also from that of presbyteries and synods, which the Puritans regarded as the supreme visible sources of ecclesiastical authority. He also maintained, that the power of governing each congregation resided in the people; and that each member had an equal share in this government, and an equal right to order matters for the good of the whole society. Hence all points both of doctrine and discipline were submitted to the discussion of the whole congregation; and whatever was supported by a majority of voices passed into a law. It was the congregation also that elected certain of the brethren to the office of pastors, to perform the duty of public instruction, and the several branches of divine worship; reserving however to themselves the power of dismissing these ministers, and reducing them to the condition of private members, whenever they should think such a change conducive to the spiritual advantage of the community. It is likewise to be observed, that the right of the pastors to preach was by no means of an exclusive nature, or peculiar to them alone; since any member that thought proper to exhort or instruct the brethren, was abundantly indulged in the liberty of *prophecy* to the whole assembly. Accordingly, when the ordinary teacher or pastor had finished his discourse, all the other brethren were permitted to communicate in public their sentiments and illustrations upon any useful or edifying subject.

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The

Independents.

(A) The followers of Novatian were called *Puritans*, because they would not communicate with the Catholic church, under pretence that her communion was polluted by admitting those to the sacred mysteries who through infirmity had sacrificed to idols in times of persecution. These unhappy men were not received by the church till after a long course of penance. The Novatians would not receive them at all, however long their penance, or however sincere their sorrow, for their sin. In other respects, the ancient Puritans were, like the English, orthodox in the faith, and of irreproachable morals.

Independents.

The zeal with which BROWN and his associates maintained and propagated these notions was in a high degree intemperate and extravagant. He affirmed, that all communion was to be broken off with those religious societies that were founded upon a different plan from his; and treated, more especially the church of England, as a spurious church, whose ministers were unlawfully ordained, whose discipline was popish and antichristian, and whose sacraments and institutions were destitute of all efficacy and virtue. The sect of this hot-headed innovator, not being able to endure the severe treatment which their own violence had brought upon them from an administration that was not distinguished by its mildness and indulgence, retired into the Netherlands, and founded churches at Middlebourg in Zealand, and at Amsterdam and Leyden in the province of Holland; but their establishments were neither solid nor lasting. Their founder returned into England; and having renounced his principles of separation, took orders in the established church, and obtained a benefice. The Puritan exiles, whom he thus abandoned, disagreed among themselves, were split into parties, and their affairs declined from day to day. This engaged the wiser part of them to mitigate the severity of their founder's plan, and to soften the rigour of his uncharitable decisions.

3
And progress.

The person who had the chief merit of bringing about this reformation was one of their pastors called *John Robinson*, a man who had much of the solemn piety of the times, and no inconsiderable portion of learning. This well meaning reformer, perceiving the defects that reigned in the discipline of Brown, and in the spirit and temper of his followers, employed his zeal and diligence in correcting them, and in new-modelling the society in such a manner as to render it less odious to its adversaries, and less liable to the just censure of those true Christians, who look upon charity as the end of the commandments. Hitherto the sect had been called *Brownists*; but Robinson having, in his Apology, affirmed, *Cetum quemlibet particularem esse totam integram, et perfectam ecclesiam ex suis partibus constantem immediate et INDEPENDENTER (quoad alias ecclesias) sub ipso Christo*,—the sect was henceforth called *Independents*, of which the apologist was considered as the founder.

The Independents were much more commendable than the Brownists. They surpassed them both in the moderation of their sentiments and in the order of their discipline. They did not, like Brown, pour forth bitter and uncharitable invectives against the churches which were governed by rules entirely different from theirs, nor pronounce them on that account unworthy of the Christian name. On the contrary, though they considered their own form of ecclesiastical government as of divine institution, and as originally introduced by the authority of the apostles, nay by the apostles themselves, they had yet candour and charity enough to acknowledge, that true religion and solid piety might flourish in those communities which were under the jurisdiction of bishops or the government of synods and presbyteries. This is put beyond all doubt by Robinson himself, who expresses his own private sentiments and those of his community in the following clear and precise words: "Profitemur coram Deo et

hominibus, adeo nobis convenire cum ecclesiis reformatis Belgicis in re religionis, ut omnibus et singulis earundem ecclesiarum fidei articulis, prout habentur in harmonia confessionum fidei, parati sumus subscribere. Ecclesias reformatas pro veris et genuinis habemus, cum usdem in sacris Dei communionem profitemur, et, quantum in nobis est, colimus." They were also much more attentive than the Brownists, in keeping on foot a regular ministry in their communities: for while the latter allowed promiscuously all ranks and orders of men to teach in public, the Independents had, and still have, a certain number of ministers, chosen respectively by the congregations where they are fixed; nor is any person among them permitted to speak in public, before he has submitted to a proper examination of his capacity and talents, and been approved of by the heads of the congregation.

Independents.

This religious society still subsists, and has produced divines as eminent for learning, piety, and virtue, as any church in Christendom. It is now distinguished from the other Protestant communities chiefly by the two following circumstances.

1. The Independents reject the use of all creeds and confessions drawn up by fallible men, requiring of their teachers no other test of orthodoxy than a declaration of their belief in the gospel of Jesus, and their adherence to the Scriptures as the sole standard of faith and practice.

In what they are now distinguished from other Protestants.

2. They attribute no virtue whatever to the rite of ordination upon which some other churches lay so much stress; for the Independents declare, that the qualifications which constitute a regular minister of the New Testament, are, a firm belief in the gospel, a principle of sincere and unaffected piety, a competent stock of knowledge, a capacity for leading devotion and communicating instruction, a serious inclination to engage in the important employment of promoting the everlasting salvation of mankind, and ordinarily an invitation to the pastoral office from some particular society of Christians. Where these things concur, they consider a person as fitted and authorised for the discharge of every duty which belongs to the ministerial function; and they believe that the imposition of the hands of bishops or presbyters would convey to him no powers or prerogatives of which he was not before possessed.

When the reformers separated from the church of Rome, they drew up public confessions of faith or articles of religion, to which they demanded subscription from their respective followers. Their purpose in this was to guard against dangerous heresies, to ascertain the meaning of Scripture language, and, we doubt not, to promote the unity of the spirit in the bond of peace. These were laudable ends; but of the means chosen for attaining them, the late Dr Taylor of Norwich, the glory of the Independent churches, and whose learning would have done honour to any church, expresses his opinion in the following indignant language: "How much sorer the Christian world valueth these creeds and confessions, I confess, for my own part, that I have no opinion of them. But we are told that they were generally drawn up by the ablest divines. But what evidence is there of this? are divines in vogue and power commonly the most knowing

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Their arguments against the use of creeds.

Independents.

knowing and upright? But granting that the reformers were in those days the ablest divines; the ablest divines educated in Popish schools, notwithstanding any pretended learning, might comparatively be very weak and defective in scripture-knowledge, which was a thing in a manner new to them. In times of great ignorance they might be men of eminence; and yet far short of being qualified to draw up and decide the true and precise rules of faith for all Christians. Yea, their very attempting to draw up, decide, and establish, such rules of faith, is an incontestible evidence of their surprising ignorance and weakness. How could they be able divines, when they imposed upon the consciences of Christians their own decisions concerning gospel-faith and doctrine? Was not this in fact to teach and constrain Christians to depart from the most fundamental principle of their religion, *subjection and allegiance to Christ, the only teacher and lawgiver*? But if they were able men, were they infallible? No: they publicly affirmed their own fallibility; and yet they acted as if they had been infallible, and could not be mistaken in prescribing faith and doctrine.

"But even if they were infallible, who gave them commission to do what the Spirit of God had done already? Could the first reformers hope to deliver the truths of religion more fully and more clearly than the Spirit of God? Had they found out more apt expressions than had occurred to the Holy Spirit? The Son of God 'spake not of himself; but as the Father said unto him, so he spake' (John xii. 50). 'The Spirit of truth spake not of himself; but whatsoever he heard, that he spake' (John xvi. 13.). 'The things of God the apostles spake, not in the words which man's wisdom teacheth, but which the Holy Ghost teacheth' (1 Cor. ii. 13.). If the Christian revelation was thus handed down to us from the Fountain of Light with so much care and exactness, both as to matter and words, by the *Son of God*, by the *Spirit*, and by the *apostles*, who were the ancient doctors and bishops? or who were the first reformers? or who were any synods or assemblies of divines, that they dared to model Christian faith into their own invented forms, and impose it upon the minds of men in their own devised terms and expressions?

"Hath Christ given authority to all his ministers, to the end of the world, to new mould his doctrines by the rules of human learning, whenever they think fit? or hath he delegated his power to any particular persons? Neither the one nor the other. His doctrines are not of such a ductile nature; but stand fixed, both as to matter and words, in the Scripture. And it is at any man's peril, who pretends to put them, *as they are rules of faith*, into any new dress or shape. I conclude therefore, that the first reformers, and all councils, synods, and assemblies, who have met together to collect, determine, and decide, to prescribe and impose matters pertaining to Christian faith, have acted without any warrant from Christ, and therefore have invaded the prerogative of him who is the sole Prophet and Lawgiver to the church. Peace and unity, I know, is the pretended good design of those creeds and confessions. But as God never sanctified them for those ends, so all the world knows they have produced the contrary effects; discord, division, and the spilling of whole seas of Christian blood, for 1400 years together."

Independents.

Such sentiments as these are now maintained by Christians of various denominations; but they were first avowed by the Independents, to whom therefore the merit or demerit of bringing them to light properly belongs. Our readers will think differently of them according to their preconceived opinions; but it is not our province either to confirm or to confute them. They rise almost necessarily out of the independent scheme of congregational churches; and we could not suppress them without deviating from our fixed resolution of doing justice to all religious parties, as well those from whom we differ as those with whom we agree. It ought not, however, to be rashly concluded, that the Independents of the present age, merely because they reject the use of all creeds of human composition, doubt or disbelieve the doctrines deemed orthodox in other churches. Their predecessors in the last century were thought to be more rigid Calvinists than the Presbyterians themselves; as many of those may likewise be, who in the present century admit not the confessions and formulas of the Calvinistic churches. They acknowledge as divine truth every doctrine contained in the Scriptures; but they think that scripture-doctrines are most properly expressed in scripture language; and the same spirit of religious liberty, which makes them reject the authority of bishops and synods in matters of discipline, makes them reject the same authority in matters of faith. In either case, to call any man or body of men their masters, would, in their opinion, be a violation of the divine law, since "one is their master, even Christ, and they all are brethren."

In support of their scheme of congregational churches, they observe, that the word *ἐκκλησία*, which we translate *church*, is always used in Scripture to signify either a *single congregation*, or the *place* where a single congregation meets. Thus that unlawful assembly at Ephesus, brought together against Paul by the craftsmen, is called *ἐκκλησία*, a church (Acts xix. 32, 39, 41.) The word, however, is generally applied to a more sacred use; but still it signifies either the *body* assembling, or the *place* in which it assembles. The whole body of the disciples at Corinth is called *the church*, and spoken of as coming together into *one place* (1 Cor. xiv. 23.) The place into which they came together we find likewise called *a church*; "when ye come together in the church,—when ye come together into one place" (1 Cor. xi. 18, 20.). Wherever there were more congregations than one, there were likewise more churches than one: Thus, "Let your women keep silence in the churches, *ὡς τῇ ἐκκλησίᾳ*" (1 Cor. xi. 18.) The whole nation of Israel is indeed called a church, but it was no more than a single congregation; for it had but one place of public worship, viz. first the tabernacle, and afterwards the temple. The Catholic church of Christ, his holy nation and kingdom, is likewise a single congregation, having one place of worship, viz. *heaven*; where all the members assemble by faith and hold communion; and in which, when they shall all be fully gathered together, they will in fact be one glorious assembly. We find it called "the general assembly and church of the first-born, whose names are written in heaven."

Besides these, the Independent can find no other description of a church in the New Testament; not a trace.

Not therefore necessarily heterodox.

Their arguments for the independence of congregational churches.

Independ-
dents.

trace of a diocese or presbytery consisting of several congregations all subject to one jurisdiction. The number of disciples in Jerusalem was certainly great before they were dispersed by the persecution in which Paul bore so active a part: yet they are never mentioned as forming distinct assemblies, but as *one* assembly meeting with its elders in *one place*; sometimes in the temple, sometimes in Solomon's porch, and sometimes in an upper room. After the dispersion, the disciples who fled from Jerusalem, as they could no longer assemble in one place, are never called a church by themselves, or *one* church, but the *churches* of Judea, Samaria, and Galilee, (Acts ix. 31. Gal. i. 22.) Whence the Independent concludes, that in Jerusalem the words *church* and *congregation* were of the same import; and if such was the case there, where the gospel was first preached, he thinks we may reasonably expect to find it so in other places. Thus when Paul on his journey calls the elders of the church of Ephesus to Miletus, he speaks to them as the joint overseers of a single congregation: "Take heed to yourselves, and to all the flock, over which the Holy Ghost hath made you overseers" (Acts xx. 28.) Had the church at Ephesus consisted of different congregations united under such a jurisdiction as that of a modern presbytery, it would have been natural to say, "Take heed to yourselves, and to the *flocks* over which the Holy Ghost hath made you overseers:" but this is a way of speaking of which the Independent finds not an instance in the whole New Testament. The sacred writers, when speaking of all the Christians in a nation or province, never call them *the church* of such a nation or province, but *the churches* of Galatia (Gal. i. 2.), *the churches* of Macedonia (2 Cor. viii. 1.), *the churches* of Asia (1 Cor. xvi. 10.) On the other hand, when speaking of the disciples in a city or town, who might ordinarily assemble in one place, they uniformly call them *a church*; saying, the church of Antioch, the church at Corinth, the church of Ephesus, and the like.

3
In each
congrega-
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than one
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presbyter,
whose office
is to teach
as well as
govern.

In each of these churches or congregations there were *elders* or *presbyters* and *deacons*; and in every church there seems to have been more than one elder, in some a great many, who all "laboured in word and doctrine." Thus we read (Acts xiv. 23.) of Paul and Barnabas ordaining *elders* in every church; and (Acts xx. 17.) of a *company* of elders in the church of Ephesus, who were exhorted to "feed the flock, and to take heed to themselves and to all the flock over which the Holy Ghost had made them overseers:" but of such elders as are to be found in modern presbyterian churches, who neither teach nor are apt to teach, the Independent finds no vestige in the Scriptures, nor in the earliest uninspired writers of the Christian church. The

rule or government of this presbytery or eldership in a church is not their own but Christ's. They are not lords over God's heritage, nor can they pretend to more power over the disciples than the apostles had. But when the administration of the apostles in the church of Jerusalem, and other churches where they acted as elders, is inquired into by an Independent, it does not appear to him that they did any thing of common concern to the church, without the consent of the multitude: nay, it seems they thought it necessary to judge and determine in discipline in presence of the whole church (Acts vi. 1—6. xv. 22. 1 Cor. v. 3, 4, 5.) Excommunication and absolution were in the power of the *church* at Corinth, and not of the elders as distinguished from the congregation (1 Cor. v. 2 Cor. ii.) The apostle indeed speaks of his delivering some unto Satan (1 Tim. i. 20.): but it is by no means clear that he did it by himself, and not after the manner pointed at 1 Cor. v. 4, 5; even as it does not appear, from his saying, in one epistle, that the gift was given unto Timothy by the putting on of *his* hands, that this was not done in the *presbytery* of a church, as in the other epistle we find it actually was. The trying and judging of false apostles was a matter of the first importance: but it was done by the elders with the flock at Ephesus (Rev. ii. 2. Acts xx. 28.); and that whole flock did in the days of Ignatius all partake of the Lord's supper, and pray together in one (a) place. Even the power of binding and loosing, or the power of the *keys*, as it has been called, was by our Saviour conferred not upon a particular order of disciples, but upon the *church*: "If thy brother shall trespass against thee, go and tell him his fault between thee and him alone: if he shall hear thee, thou hast gained thy brother. But if he will not hear thee, then take with thee one or two more, that in the mouth of one or two witnesses every word may be established. And if he shall neglect to hear them, tell it unto the church: but if he neglect to hear the *church*, let him be unto thee as an heathen man and a publican. Verily I say unto you, whatsoever ye shall bind on earth, shall be bound, &c. (St Mat. xviii. 15, 16, 17, 18.) It is not said, if he shall neglect to hear the one or two, tell it to the *elders* of the church; far less can it be meant that the offended person should tell the cause of his offence to *all* the disciples in a presbytery or diocese consisting of many congregations: but he is required to tell it to that particular *church* or *congregation* to which they both belong; and the sentence of that assembly, pronounced by its elders, is in a very solemn manner declared to be final, from which there lies no appeal to any jurisdiction on earth.

Independ-
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is final.

11
With respect to the *constituting* of elders in any church or congregation, the Independent reasons in the following manner: What con-
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church.

(B) The evidence upon which this is said by Mr Glas (for the whole of this reasoning is extracted from his works), is probably the following passage in the epistle of Ignatius to the Ephesians: *Εἰ γὰρ ἑὸς καὶ διυλίσου πρὸς τοὺς ἄλλους*, &c. "For if the prayer of one or two be of such force as we are told, how much more prevalent must that be which is made by the bishop and the whole church? He then that does not come together into the *same place* with it, is proud, and hath condemned himself; for it is written, God resisteth the proud. Let us not therefore resist the bishop, that we may be the servants of God." The sentence, as it thus stands by itself, certainly countenances Mr Glas's scheme; but the reader who thinks any regard due to the testimony of Ignatius, will do well to peruse the whole epistle as published by Vossius.

Independents.

Independents.

lowing manner: The officers of Christ's appointment are either ordinary and permanent in the church, or they were extraordinary and peculiar to the planting of Christianity. The extraordinary were those who were employed in laying the plan of the gospel churches, and in publishing the New Testament revelation. Such were the apostles, the chosen witnesses of our Saviour's resurrection; such were the prophets inspired by the Holy Ghost for explaining infallibly the Old Testament by the things written in the New; and such were the evangelists, the apostles ministers. These can be succeeded by none in that which was peculiar to them, because their work was completed by themselves. But they are succeeded in all that was not peculiar to them by elders and deacons, the only two ordinary and permanent orders of ministers in the church. We have already seen, that it belongs to the office of the elder to feed the flock of Christ; and the only question to be settled is, how men are ordinarily called to that office? for about the office of the deacon there is little or no dispute. No man now can pretend to be so called of God to the ministry of the word as the apostles and other inspired elders were, whom he chose to be the publishers of his revealed truth, and to whose mission he bore witness in an extraordinary manner. But what the apostles were to those who had the divine oracles from their mouths, that their writings are to us: and therefore as no man can lawfully pretend a call from God to make any addition to those writings, so neither can any man pretend to be lawfully called to the ministry of the word already written but in the manner which that word directs. Now there is nothing of which the New Testament speaks more clearly than of the *characters* of those who should exercise the office of elders in the church, and of the actual exercise of that office. The former are graphically drawn in the epistles to Timothy and Titus; and the latter is minutely described in Paul's discourse to the Ephesian elders, in Peter's exhortation to elders, and our Lord's commission to those ministers, with whom he promised to be always present even unto the end of the world. It is not competent for any man or body of men to add to, or diminish from, the description of a gospel minister given in these places, so as to insist upon the necessity of any qualification which is not there mentioned, or to dispense with any qualification as needless which is there required. Neither has Jesus Christ, the only legislator to the church, given to any ministers or people any power or right whatsoever to call, send, elect, or ordain, to that office any person who is not qualified according to the description given in his law; nor has he given any power or right to reject the least of them who are so qualified, and who desire the office of a bishop or elder. Let a man have hands laid upon him by such as could prove an uninterrupted descent by imposition of hands from the apostles; let him be set apart to that office by a company of ministers themselves, the most conformable to the scripture character, and let him be chosen by the most holy people on earth; yet if he answer not the New Testament description of a minister, he is not called of God to that office, and is no minister of Christ, but is indeed running unsent. No form of ordination can pretend to such a clear foundation in the New Testament as

the description of the persons who should be elders of the church; and the laying on of hands, whether by bishops or presbyters, is of no more importance in the mission of a minister of Christ, than the waving of one's hand in the air or the putting of it into his bosom; for now when the power of miracles has ceased, it is obvious that such a rite, by whomsoever performed, can convey no powers, whether ordinary or extraordinary. Indeed it appears to have been sometimes used even in the apostolic age without any such intention. When Paul and Barnabas were separated to the particular employment of going out to the Gentiles, the prophets and teachers at Antioch "prayed and laid their hands on them:" But did this ceremony confer upon the two apostles any new power or authority to act as ministers of Christ? Did the imposition of hands make those shining lights of the gospel one whit better qualified than they were before to convert and baptize the nations, to feed the flock of God, to teach, rebuke, or exhort, with all long suffering and doctrine? It cannot be pretended. Paul and Barnabas had undoubtedly received the Holy Ghost before they came to Antioch; and as they were apostles, they were of course authorised to discharge all the functions of the inferior and ordinary ministers of the gospel. In a word, whoever in his life and conversation is conformable to the character which the inspired writers give of a bishop or elder, and is likewise qualified by his "mightiness in the scripture" to discharge the duties of that office, is fully authorised to administer the sacraments of baptism and the Lord's supper, to teach, exhort, and rebuke, with all long suffering and doctrine, and has all the call and mission which the Lord now gives to any man; whilst he who wants the qualifications mentioned, has not God's call, whatever he may have; nor any authority to preach the gospel of Christ, or to dispense the ordinances of his religion.

From this view of the Independent principles, which is faithfully taken from their own writers, it appears, that, according to them, even the election of a congregation confers upon the man whom they may choose for their pastor no new powers, but only creates a new relation between him and a particular flock, giving him an exclusive right, either by himself or in conjunction with other pastors constituted in the same manner, to exercise among them that authority which he derives immediately from Christ, and which in a greater or less degree is possessed by every sincere Christian according to his gifts and abilities. Were the ministers of the gospel constituted in any other way than this; by imposition of hands, for instance, in succession from the apostles; the case of Christians would, in the opinion of the Independents, be extremely hard, and the ways of God scarcely equal. We are strictly commanded not to forsake the assembling of ourselves together, but to continue steadfast in the apostles doctrine and fellowship, and in the breaking of bread, and in prayer: "but can any man (asks one of their advocates) bring himself to believe, that what he is commanded to do in point of gratitude, what is made his own personal act, an act expressive of certain dutiful and pious affections, can possibly be restricted to the intermediate offices or instrumentality of others, who act by powers which he can neither give nor take away?"

To

12
Arguments
against the
efficacy of
every kind
of ministerial
ordination.

13
And even
against the
necessity of
a popular
call.

Indetermi-
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Index.

To suppose a thing necessary to my happiness, which is not in my own power, or wholly depends upon the good pleasure of another, over whom I have no authority, and concerning whose intentions and dispositions I can have no security, is to suppose a constitution the most foolish and ill-natured, utterly inconsistent with our ideas of a wise and good Agent." Such are some of the principal arguments by which the Independents maintain the divine right of congregational churches, and the inefficacy of ministerial ordination to constitute a minister of Christ. We mean not to remark upon them, as the reader will find different constitutions of the church pleaded for under the words PRESBYTERIANS and EPISCOPACY, to which we refer him for farther satisfaction. We shall only observe at present, what it would be affectation to pass unnoticed, that the mode of reasoning adopted by the last quoted advocate for the Independents, if pushed as far as it will go, necessarily leads to consequences which will not readily be admitted by a Christian of any denomination, or indeed by a serious and consistent Theist.

INDETERMINATE, in general, an appellation given to whatever is not certain, fixed, and limited; in which sense it is the same with *indefinite*.

INDEX, in anatomy, denotes the fore-finger. It is thus called from *indico*, I point or direct; because that finger is generally so used; whence also the extensor indicis is called *indicator*.

INDEX, in arithmetic and algebra, shows to what power any quantity is involved, and is otherwise called its *exponent*. See ALGEBRA, p. 412.

INDEX of a Book, is that part annexed to a book, referring to the particular matters or passages therein contained.

INDEX of a Globe, is a little style fitted on to the northpole, and turning round with it, pointing to certain divisions in the hour-circle. It is sometimes also called *gnomon*. See GLOBE.

Expurgatory INDEX, a catalogue of prohibited books in the church of Rome.

The first catalogues of this kind were made by the inquisitors; and these were afterwards approved of by the council of Trent, after some alteration was made in them by way of retrenchment or addition. Thus an index of heretical books being formed, it was confirmed by a bull of Clement VIII. in 1595, and printed with several introductory rules; by the fourth of which, the use of the scriptures in the vulgar tongue is forbidden to all persons without a particular licence; and by the tenth rule it is ordained, that no book shall be printed at Rome without the approbation of the Pope's vicar, or some person delegated by the Pope; nor in any other places, unless allowed by the bishop of the diocese, or some person deputed by him, or by the inquisitor of heretical pravity.

The Trent index being thus published, Philip II. of Spain ordered another to be printed at Antwerp, in 1571, with considerable enlargements. Another index was published in Spain in 1584; a copy of which N° 165.

was snatched out of the fire when the English plundered Cadiz. Afterwards there were several expurgatory indexes printed at Rome and Naples, and particularly in Spain.

INDIA. See HINDOSTAN.—By the name of *India* the ancients understood only the western peninsula, on this side the Ganges, and the peninsula beyond it, having little or no knowledge of the countries which lie farther to the eastward; though by the moderns all those vast tracts from the eastern parts of the Persian empire to the islands of Japan, are confounded under the general name of *East Indies*. Even the ancients, though originally they were acquainted only with the western parts of Hindostan, gradually extended the name of *India* over the other countries they discovered to the eastward; so that probably they would have involved all the rest in the same general designation, had they been as well acquainted with them as the moderns are. By whom these countries were originally peopled, is a question which in all probability will never be resolved. Certain it is, that some works in these parts discover marks of astonishing skill and power in the inhabitants, such as the images in the island of Elephanta; the rocking stones of immense weight, yet so nicely balanced that a man can move them with his hand; the observatory at Benares, &c. These stupendous works are by Mr Bryant attributed to the Cushites or Babylonians, the first distinct nation in the world, and who of consequence must for some time have possessed in a manner the sovereignty of the whole earth; and it can by no means appear improbable, that the subjects of Nimrod, the beginning of whose kingdom was in Shinar, might extend themselves eastward, and thus fill the fertile regions of the east with inhabitants, without thinking it worth while for a long time to meddle with the less mild and rich countries to the westward. Thus would be formed that great and for some time insuperable division betwixt the inhabitants of India and other countries; so that the western nations knew not even of the existence of the Indians but by obscure report; while the latter, ignorant of their own origin, invented a thousand idle tales concerning the antiquity of their nation, which some of the moderns have been credulous enough to believe and record as facts.

The first among the western nations who distinguished themselves by their application to navigation and commerce, and who were of consequence likely to discover these distant nations, were the Egyptians and Phenicians. The former, however, soon lost their inclination for naval affairs, and held all sea-faring people in detestation as profane persons; though the extensive conquests of Sesostris, if we can believe them, must have in a great measure supplied this defect. Without regard to the prejudice of his people against maritime affairs, he is said to have fitted out a fleet of 400 sail in the Arabian Gulph or Red Sea, which conquered all the countries lying along the *Erythrean Sea* (A) to India; while the army led by himself marched through Asia, and subdued all the countries to the Ganges;

(A) This must not be confounded with the *Red Sea*, notwithstanding the similarity of names. The *Erythrean* sea was that part of the ocean which is interposed betwixt the straits of Babelmandel and the Malabar coast, now called the *Indian sea* or ocean.

India. Ganges; after which he crossed that river, and advanced to the eastern ocean.

4
Dr Robert
son's rea-
sons for dis-
believing
it.

Great disputes have been carried on with respect to this conqueror, and the famous expedition just now related; but the learned Dr Robertson, in his *Disquisition concerning ancient India*, declares himself in doubt whether any such expedition ever was made, for the following reasons. 1. Few historical facts seem to be better established than that of the aversion the Egyptians entertained to seafaring people and naval affairs; and the Doctor considers it as impossible even for the most powerful monarch to change in a few years a national habit confirmed by time and sanctified by religion. The very magnitude of the armaments is an argument against their existence; for besides the 400 ships of war, he had another fleet in the Mediterranean; and such a mighty navy could not have been constructed in any nation unaccustomed to maritime affairs, in a few years. 2. Herodotus makes no mention of the conquests of India by Sesostris, though he relates his history at some length. Our author is of opinion that the story was fabricated betwixt the time of Herodotus and that of Diodorus Siculus, from whom we have the first account of this expedition. Diodorus himself informs us that he had it from the Egyptian priests; and gives it as his opinion, that "many things they related flowed rather from a desire to promote the honour of their country than from attention to truth:" and he takes notice that both the Egyptian priests and Greek writers differ widely from one another in the accounts which they give of the actions of Sesostris. 3. Though Diodorus declares that he has selected the most probable parts of the Egyptian narrative, yet there are still so many improbabilities, or rather impossibilities, contained in his relation, that we cannot by any means give credit to it. 4. For the reason just mentioned, the judicious geographer Strabo rejected the account altogether, and ranks the exploits of Sesostris in India with the fabulous ones of Bacchus and Hercules.

5
Inter-
course
of the Ty-
rians with
India.

But whatever may be determined with regard to the Egyptians, it is certain that the Tyrians kept up a constant intercourse with some parts of India by navigating the Arabian Gulf, now the Red Sea. Of this navigation they became masters by taking from the Idumeans some maritime places on the coast of the Red Sea: but as the distance betwixt the nearest place of that Sea and Tyre was still considerable, the land-carriage would have been very tedious and expensive; for which reason it was necessary to become masters of a port on the eastern part of the Mediterranean, near to the Red Sea than Tyre, that so the goods might be shipped from thence to Tyre itself. With this view they took possession of Rhinvelura, the nearest port on the Mediterranean to the Arabian Gulf; and to that port all the goods from India were conveyed by a much shorter and less expensive route than over land.—This is the first authentic account of any intercourse betwixt India and the western part of the world: and to this we are without doubt in a great measure to ascribe the vast wealth and power for which the city of Tyre was anciently renowned; for in other respects the whole territory of Phenicia was but of little consequence. Notwithstanding the frequency of these voyages, however, the ancients are able to

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give little or no account of them. The most particular description we have of the wealth, power, and commerce of ancient Tyre, is in the prophecies of Ezekiel; so that if the Tyrians themselves kept any journals of their voyages, it is probable that they were entirely lost when the city was destroyed by Alexander the Great.

India.

Though the Jews, under the reign of David and Solomon, carried on an extensive and lucrative commerce, yet our author is of opinion that they did not sit trade to any part of India. There are only two places mentioned to which their ships sailed, viz. Ophir and Tarshish; both of which are now supposed to have been situated on the eastern coast of Africa: the ancient Tarshish, according to Mr Bruce, was the present Mocha; and Ophir the kingdom of Sofala, so remarkable in former times for its mines, that it was called by Oriental writers the *golden Sofala* *.

6
The Jews
did not vi-
sit India.

Thus the Indians continued for a long time unknown to the western nations, and undisturbed by them; probably in subjection to the mighty empire of Babylon, from which the country was originally peopled, or in alliance with it; and the possession of this vast region will easily account for the immense and otherwise almost incredible wealth and power of the ancient Babylonish monarchs. Soon after the destruction of that monarchy by the Persians, however, we find their monarch Darius Hytaspes undertaking an expedition against the Indians †. His conquests were not extensive, as they did not reach beyond the territory watered by the Indies; nevertheless, such as they were, the acquisition seems to have been very important, as the revenue derived from the conquered territory, according to Herodotus, was near a third of that of the whole Persian empire. According to his account, however, we must form a much more diminutive opinion of the riches of the Persian monarchs than has commonly been done; since Herodotus tells us, that the empire was divided into 20 satrapies or governments; all of which yielded a revenue of 14,560 Euboic talents, amounting in the whole to 2,807,437 l. sterling. The amount of the revenue from the conquered provinces of India therefore must have been considerably short of a million. Very little knowledge of the country was diffused by the expedition of Darius, or the voyage of Scylax whom he employed to explore the coasts: for the Greeks paid no regard to the transactions of those whom they called *Barbarians*; and as for Scylax himself, he told so many incredible stories in the account he gave of his voyage, that he had the misfortune to be disbelieved in almost every thing, whether true or false.

* See Ophir
and Tar-
shish.

7
Conquests
of the Per-
sians in In-
dia
† See Hin-
dostan, n^o 2.

The expedition of Alexander is so fully taken notice of under the article HINDOSTAN, that nothing more remains to be said upon it in this place, than that he went no farther into the country than the present territory of the Panjab, all of which he did not traverse. Its south-west boundary is formed by a river anciently called the *Hysudrus*, now the *Setlege*. The breadth of this district from Ludhana on the Setlege, to Attock on the Indus, is computed to be 259 geographical miles in a straight line; and Alexander's march, computed in the same manner, did not exceed 200; nevertheless, by the spreading of his numerous army over the country, and the exact measurement and delineation

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Of Alexan-
der the
Great.

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tion

India.

tion of all his movements by men of science whom he employed, a very extensive knowledge of the western part of India was obtained. It is, however, surprising, that having marched through so many countries in the neighbourhood of India, where the people must have been well acquainted with the nature of the climate, the Macedonian conqueror did not receive any information concerning the difficulties he would meet with from the rains which fell periodically at a certain season of the year. It was the extreme distress occasioned by them which made his soldiers finally resolve to proceed no farther; and no wonder indeed that they did adopt this resolution, since Diodorus informs us, that it had rained incessantly for 70 days before their departure. These rains, however, according to the testimony both of ancient and modern writers, fall only in the mountainous parts, little or none being ever seen in the plains. Aristobulus informs us, that in the country through which Alexander marched, though heavy rains fell among the mountains, not a shower was seen in the plains below. The district is now seldom visited by Europeans; but major Rennel was informed by a person of credit, who had resided in the Panjab, that during great part of the S. W. monsoon, or at least in the months July, August, and part of September, which is the rainy season in most other parts of India, very little rain falls in the Delta of the Indies, except very near the sea, though the atmosphere is generally clouded, and very few showers fall throughout the whole season. Captain Hamilton relates, that when he visited Tatta, no rain had fallen there for three years before. We may have some idea of what the Macedonians suffered by what happened afterwards to Nadir Shah, who, though possessed of vast wealth and power, as well as great experience in military affairs, yet lost a great part of his army in crossing the mountains and rivers of the Panjab, and in battles with the savage inhabitants who inhabit the countries betwixt the Oxus and the frontiers of Persia. He marched through the same countries, and nearly in the same direction, that Alexander did.

9
State of India in the time of Alexander.

By his voyage down the river Indus, Alexander contributed much more to enlarge our geographical knowledge of India than by all his marches and conquests by land. According to Major Rennel, the space of country through which he sailed on the Indus, from the Hyphasis to the ocean, was not less than 1000 miles; and as, during the whole of that navigation, he obliged the nations on both sides the river to submit to him, we may be very certain that the country on each side was explored to some distance. An exact account not only of his military operations, but of every thing worthy of notice relating to the countries through which he passed, was preserved in the journals of his three officers, Lagus, Nearchus, and Aristobulus; and these journals, Arrian informs us, he followed in the composition of his history. From these authors we learn, that in the time of Alexander, the western part of that vast tract named *India* was possessed by seven very powerful monarchs. The territory of king Porus, which Alexander first conquered, and then restored to him, is said to have contained no fewer than 2000 towns; and the king of the Prasii had assembled an army of 20,000 cavalry, 2000 armed chariots, and a great number of elephants, to oppose the Macedonian

monarch on the banks of the Ganges. The navigable rivers with which the Panjab country abounds, afforded then, and still continue to afford, an intercourse from one part to another by water: and as at that time these rivers probably had many ships on them for the purposes of commerce, Alexander might easily collect all the number he is said to have had, viz. 2000; since it is reported that Semiramis was opposed by double the number on the Indus when she invaded India. When Mahmud Gazni also invaded this country, a fleet was collected upon the Indus to oppose him, consisting of the same number of vessels. From the Aycen Akbery, also, we learn that the inhabitants of this part of India still continue to carry on all their communication with each other by water; and the inhabitants of the Circar of Tatta alone have 40,000 vessels of various constructions.

Under the article *HINDOSTAN* we have mentioned Why Alexander's historians take no notice of the voyage of Scylax. Major Rennel's opinion concerning the silence of Alexander's historians about the expedition of Scylax; but Dr Robertson accounts for it in another manner. "It is remarkable (says he), that neither Nearchus, nor Ptolemy, nor Aristobulus, nor even Arrian, once mention the voyage of Scylax. This could not proceed from their being unacquainted with it, for Herodotus was a favourite author in the hands of every Greek who had any pretensions to literature. It was probably occasioned by the reasons they had to distrust the veracity of Scylax, of which I have already taken notice. Accordingly, in a speech which Arrian puts in the mouth of Alexander, he asserts, that, except Bacchus, he was the first who had passed the Indus; which implies that he disbelieved what is related concerning Scylax, and was not acquainted with what Darius Hystaspes is said to have done in order to subject that part of India to the Persian crown. This opinion is confirmed by Megasthenes, who resided a considerable time in India. He asserts, that, except Bacchus and Hercules (to whose fabulous expeditions Strabo is astonished that he should have given any credit), Alexander was the first who had invaded India. Arrian informs us that the Assaceni, and other people who inhabited the country now called *Candabar*, had been tributary first to the Assyrians and then to the Medes and Persians. As all the fertile provinces on the north-west of the Indus were anciently reckoned to be part of India, it is probable that what was levied from them is the sum mentioned in the tribute roll from which Herodotus drew his account of the annual revenue of the Persian empire, and that none of the provinces to the south of the Indus were ever subject to the kings of Persia."—The Doctor differs from Mr Rennel with respect to the surprise which Alexander and his army expressed when they saw the high tides at the mouth of the Indus. This he thinks might very naturally have been the case, notwithstanding what Herodotus had written concerning the flux and reflux observable in the Red Sea. All that has been mentioned by Herodotus concerning this phenomenon is, that "in the Red Sea there is a regular ebb and flow of the tide every day." No wonder therefore that the Macedonians should be surprised and terrified at the very high tides which presented themselves in the Indian ocean, which the few words of Herodotus above mentioned had by no means led them to expect.

^{India.} peft. In the like manner the Romans were furprised at the tides in the Atlantic, when they had conquered some of the countries bordering upon that ocean. Cæfar describes the aftonifhment of his foldiers at a fpring tide in Britain which greatly damaged his fleet; and indeed, confidering the very little rife of the tide in the Mediterranean, to which alone the Greeks and Romans had accefs, we may reckon the account given us by Arrian highly probable.

The country on each fide the Indus was found, in the time of Alexander, to be in no degree inferior in population to the kingdom of Porus already mentioned. The climate, foil, and productions of India, as well as the manners and customs of the inhabitants, are exactly defcribed, and the descriptions found to correspond in a furprifing manner with modern accounts. The ftated change of feafons, now known by the name of *monfoons*, the periodical rains, the swellings and inundations of the rivers, with the appearance of the country during the time they continue, are particularly defcribed. The descriptions of the inhabitants are equally particular; their living entirely upon vegetable food, their divifion into tribes or cafts, with many of the particularities related under the article Hindoo, are to be met with in the accounts of Alexander's expedition. His military operations, however, extended but a very little way into India properly fo called; no farther indeed than the modern province of Labor, and the countries on the banks of the Indus from Moultan to the fea; though, had he lived to undertake another expedition as he intended, it is very probable that he would have fubdued a vaffly greater tract of country; nor indeed could any thing probably have fet bounds to his conquefts but death or revolts in diftant provinces of his empire. In order to fecure the obedience of thofe countries he fubdued, Alexander found it neceffary to build a number of fortified cities; and the farther eaftward he extended his conquefts, the more neceffary did he find this task. ¹¹ Three he built in India itfelf; two on the banks of the Hydafpes, and a third on the Acesinae, both navigable rivers, falling into the Indus after they have united their freams. By means of thefe cities he intended not only to keep the adjacent countries in awe, but to promote a commercial intercourfe betwixt different parts both by land and water. * With this view alfo, on his return to Sufa, he furveyed in perfon the courfe of the Euphrates and Tigris, caufing the catarafts or dams to be removed which the Perfian monarchs had built to obftruct the navigation of thefe rivers, in conformity to a maxim of their fuperftition, that it was unlawful to defile any of the elements, which they imagined was done by navigators. After the navigation was opened in this manner, he propofed that the valuable commodities of India fhould be imported into the other parts of his dominions by means of the Perfian Gulf; while through the Red Sea they were conveyed to Alexandria in Egypt, and thence difperfed all over Europe.

The death of Alexander having put an end to all his great fchemes, the eaftern part of his dominions devolved firft on Pytho the fon of Agenor, and afterwards on Seleucus. The latter was very fenfible of the advantages to be derived from keeping India in

fujection. With this view he undertook an expedition into that country, partly to eftablifh his authority more perfectly, and partly to defend the Macedonian territories againft Sandracottus king of the Præfi, who threatened to attack them. The particulars of his expedition are very little known; Juftin being the only author who mentions them, and his authority is but of little weight, unlefs corroborated by the testimony of other hiftorians. Plutarch, who tells us that Seleucus carried his arms farther into India than Alexander, is fubject to an imputation of the fame kind; but Pliny, whose authority is of confiderably greater weight, corroborates the testimony of Plutarch in this inftance, tho' his words are fo obfcure, that learned men differ in opinion concerning their meaning. Bayer thinks they imply that Seleucus marched from the Hyphafis, the boundary of Alexander's conquefts, to the Hyfudrus, from thence to Palibothra, and then to the mouth of the Ganges; the diftances of the principal ftations being marked, and amounting in all to 2244 Roman miles. Notwithstanding this authority, however, Dr Robertfon thinks it very improbable that the expedition of Seleucus fhould have continued fo long, as in that cafe "the ancients would have had a more accurate knowledge of that part of the country than they feem ever to have poffeffed."

The career of Seleucus in the eaft was ftopped by Antigonus, who prepared to invade the western part of his dominions. The former was therefore obliged to conclude a treaty with Sandracottus, whom he allowed to remain in quiet poffeffion of his territories: but Dr Robertfon is of opinion, that during the lifetime of Seleucus, which continued 42 years after the death of Alexander, no diminution of the Macedonian territories took place. With a view of keeping up a friendly intercourfe with the Indian Prince, Seleucus fent Megafthenes, one of Alexander's officers, to Palibothra, capital of the kingdom of the Præfi, fituated on the banks of the Ganges. This city is by Dr Robertfon fupposed to be the modern Allahabad, feated at the confluent of the Juruna and Ganges, contrary to the opinion of Major Rennel, who fupposes it to be Patna.* As Megafthenes refided in this city for a confiderable fpace of time, he had an opportunity of making many obfervations on the country of India in general; and thefe obfervations he was induced afterwards to publish. Unhappily, however, he mingled with his relations the moft extravagant fables. To him may be traced the ridiculous accounts of men with ears fo large that they could wrap themfelves up in them; of tribes with one eye, without mouths or nofes, &c. whence the extracts from his book given by Arrian, Diodorus, and other ancient writers, can fcarcely be credited, unlefs confirmed by other evidence.

After the embaffy of Megafthenes to Sandracottus, and that of his fon Damaichus to Allitrochidas, the fucceffor of Sandracottus, we hear no more of the affairs of India with regard to the Macedonians, until the time of Antiochus the Great, who made a fhort incursion into India about 197 years after the death of Seleucus. All that we know of this expedition is, that the Syrian monarch, after finifhing a war he carried on againft the two revolted provinces of Parthia and Bactria, entered India, where he obliged Sophagænus,

^{India.}
¹² Expedition
of Seleucus
to India.

¹³ Conjectures
concerning
the fituation
of Palibothra.

* See Hift.
doftan, n^o 4.

¹⁴ Expedition
of Antiochus the
Great into
India.

India. gasenus, king of the country which he invaded, to pay a sum of money, and give him a number of elephants. It is probable that the successors of Seleucus were obliged soon after his death to abandon all their Indian territories.

15
Account of
the Grecian
kingdom of
Bactria.

After the loss of India by the Syrians, an intercourse was kept up for some time betwixt it and the Greek kingdom of Bactria. This last became an independent state about 69 years after the death of Alexander; and, according to the few hints we have concerning it in ancient authors, carried on a great traffic with India. Nay, the Bactrian monarchs are said to have conquered more extensive tracts in that region than Alexander himself had done. Six princes reigned over this new kingdom in succession; some of whom, elated with the conquests they had made and the power they had acquired, assumed the title of *Great King*, by which the Persian monarchs were distinguished in their highest splendor. Strabo informs us, that the Bactrian princes were deprived of their territories by the Scythian Nomads, who came from the country beyond the Iaxartes, and were known by the names of Afii, Pafiani, Tachari, and Scarauli. This is confirmed by the testimony of some Chinese historians quoted by M. de Guignes. According to them, about 126 years before the Christian era, a powerful horde of Tartars, pushed from their native seats on the confines of China, and obliged to move farther to the west, passed the Iaxartes, and, pouring in upon Bactria like an irresistible torrent, overwhelmed that kingdom, and put an end to the dominion of the Greeks after it had lasted near 130 years.

16
Intercourse
betwixt E-
gypt and
India.

From this time to the close of the 15th century, all thoughts of establishing any dominion in India were totally abandoned by the Europeans. The only object now was to promote a commercial intercourse with that country; and Egypt was the medium by which that intercourse was to be promoted. Ptolemy the son of Lagos, and first king of Egypt, first raised the power and splendor of Alexandria, which he knew had been built by Alexander with a view to carry on a trade to India: and in order to make the navigation more secure, he built the celebrated light-house at Pharos; a work so magnificent as to be reckoned one of the wonders of the world. His son Ptolemy Philadelphus prosecuted the same plan very vigorously. In his time the Indian commerce once more began to centre in Tyre; but to remove it effectually from thence, he formed a canal between Arsinoe on the Red Sea, not far from the place where Suez now stands, and the Pelusiac or eastern branch of the Nile. This canal was 100 cubits broad and 30 deep; so that by means of it the productions of India might have been conveyed to Alexandria entirely by water. We know not whether this work was ever finished, or whether it was found useless on account of the dangerous navigation towards the northern extremity of the Red Sea; but whatever was the cause, it is certain that no use was made of it, and a new city named Berenice, situated almost under the tropic upon the western shore of the Red Sea, became the staple of Indian commerce. From thence the goods were transported by land to Coptos, a city distant only three miles from the Nile, to which it was joined by a navigable canal. Thus, however, there was a very tedious land-carriage of no less than

India. 258 Roman miles through the barren desert of Thebais: but Ptolemy caused diligent search to be made every where for springs, and wherever these were found, he built inns or caravanseras for the accommodation of travellers; and thus the commerce with India was carried on till Egypt became subject to the Romans. The ships during this period set sail from Berenice, and coasting along the Arabian shore to the promontory of Syagrus, now Cape Rasalgate, held their course along the coast of Persia till they arrived at the mouth of the western branch of the river Indus. They either failed up this branch till they came to Pattala, now Tatta, situated at the upper part of the Delta, or continued their course to some other emporium on the western part of the Indian coast. A more convenient course was afterwards found by sailing directly to Zizenis, a place concerning which there is now some dispute. Montequieu will have it to be the kingdom of Sigertis, on the coast adjacent to the Indus, and which was conquered by the Bactrian monarchs; but Major Rennel is of opinion that it was a port on the Malabar coast. Dr Robertson does not pretend to decide this dispute; but is of opinion, that during the time of the Ptolemies very little progress was made in the discovery of India. He contests the opinion of Major Rennel, that "under the Ptolemies the Egyptians extended their navigation to the extreme point of the Indian continent, and even sailed up the Ganges to Palibothra, now Patna." In this case he thinks that the interior parts of India must have been much better known to the ancients than we have any reason to believe they were. He owns indeed that Strabo mentions the sailing up the Ganges, but then it is only cursorily and in a single sentence; "whereas if such a considerable inland voyage of above 400 miles, through a populous and rich country, had been customary, or even if it had been ever performed by the Roman, Greek, or Egyptian traders, it must have merited a particular description, and must have been mentioned by Pliny and other writers, as there was nothing similar to it in the practice of navigation among the ancients."—The extreme danger of navigating the Red Sea in ancient times (which even in the present improved state of navigation is not entirely got over) seems to have been the principal reason which induced Ptolemy to remove the communication with India from Arsinoe to Berenice, as there were other harbours on the same coast considerably nearer the Nile than it. After the ruin of Coptos by the emperor Dioclesian, the Indian commodities were conveyed from the Red Sea to the Nile from Cosseir, supposed by Dr Robertson to be the *Philoterus Portus* of Ptolemy, to Cous, the *Vicus Apollinis*, a journey of four days. Hence Cous from a small village became an opulent city; but in process of time, the trade from India removed from Cous to Kene, farther down the river. In modern times such Indian goods as are brought by the Red Sea come from Gidda to Suez, and are carried across the Isthmus on camels, or brought by the caravan returning from the pilgrimage to Mecca.

It was to this monopoly of Indian commerce that ¹⁷ Egypt owed its vast wealth and power during the Syrian time of its Macedonian monarchs; but it appears surprising that no attempt was made by the Syrian monarchs to rival the Egyptians in it, especially as the latter were in

India in possession of the Persian gulf, from whence they might have imported the Indian commodities by a much shorter navigation than could be done by the Egyptians. For this neglect several reasons are assigned by our learned author. 1. The Egyptians, under their Greek monarchs, applied themselves to maritime affairs; and were in possession of such a powerful fleet as gave them a decided superiority at sea. 2. No intercourse by sea was ever kept up betwixt Persia and India, on account of the aversion which the Persians had to maritime affairs. All the Indian commodities were then conveyed in the most tedious and difficult manner over land, and dispersed throughout the various provinces, partly by means of navigable rivers and partly by means of the Caspian sea. 3. Many of the ancients, by an unaccountable error in geography, imagined the Caspian sea to be a part of the great northern ocean; and thus the kings of Syria might hope to convey the Indian commodities to the European countries without attempting to navigate those seas which the Egyptian monarchs deemed their own property. Seleucus Nicator, the first and greatest of the Syro-Macedonian monarchs, formed a project of joining the Euxine and Caspian seas by a navigable canal, which would have effectually answered the purpose, but was assassinated before he could put it in execution, and none of his successors had abilities to execute such an undertaking. Alexander the Great had given orders, a little before his death, to fit out a squadron on the Caspian sea, in order to discover whether it had any communication with the northern ocean, the Euxine sea, or Indian ocean; but Dr Robertson justly thinks it surprising that such errors concerning this sea should have existed among the ancients, as Herodotus had long before described it properly in the following words: "The Caspian is a sea by itself, unconnected with any other. Its length is as much as a vessel with oars can sail in 15 days; and its greatest breadth as much as it can sail in eight days." Aristotle describes it in like manner, and insists that it ought to be called a great lake, and not a sea.

18
**Intercourse
of the Ro-
mans with
India.**

On the conquest of Egypt by the Romans the Indian commodities continued as usual to be imported to Alexandria in Egypt, and from thence to Rome; but besides this, the most ancient communication betwixt the eastern and western parts of Asia seems never to have been entirely given up. Syria and Palestine are separated from Mesopotamia by a desert; but the passage through it was much facilitated by its affording a station which abounded in water. Hence the possession of this station became an object of such consequence, that Solomon built upon it the city called in Syria *Tadmor*, and in Greek *Palmyra*. Both these names are expressive of its situation in a spot adorned with palm-trees. Though its situation for trade may to us seem very unfavourable (being 60 miles from the Euphrates, by which alone it could receive the Indian commodities, and 203 from the nearest coast of the Mediterranean,) yet the value and small bulk of the goods in question rendered the conveyance of them by a long carriage over land not only practicable but lucrative and advantageous. Hence the inhabitants became opulent and powerful, and long maintained its independence even after the Syrian empire became subject to Rome. After the reduction of *Palmyra* by the

emperor Aurelian, however, it did not any more recover its splendor; the trade gradually turned into other channels, and the city was reduced to ruins, which still exist, and manifest its former grandeur. See *PALMYRA*.

The excessive eagerness of the Romans for Asiatic luxuries of all kinds kept up an unceasing intercourse with India during the whole time that the empire continued in its power; and even after the destruction of the western part, it was kept up betwixt Constantinople and those parts of India which had been visited formerly by merchants from the western empire. Long before this period, however, a much better method of sailing to India had been discovered by one Hippalus, the commander of an Indian ship, who lived about 80 years after Egypt had been annexed to the Roman empire. This man having observed the periodical shifting of the monsoons, and how steadily they blew from the east or west during some months, ventured to leave the coast, and sail boldly across the Indian ocean from the mouth of the Arabian gulf to Musiris, a port on the Malabar coast; which discovery was reckoned a matter of such importance, that the name of Hippalus was given to the wind by which he performed the voyage. Pliny gives a very particular account of the manner in which the Indian traffic was now carried on, mentioning the particular stages, and the distances between them, which are as follow. From Alexandria to Juliopolis was two miles; and there the cargo destined for India was shipped on the Nile, and carried to Coptos, distant 303 miles, the voyage being usually performed in twelve days. From Coptos they were conveyed by land to Berenice, distant 258 miles, and halting at different stations as occasion required. The journey was finished on the 12th day; but by reason of the heat the caravan travelled only in the night. The ships left Berenice about midsummer, and in 30 days reached Ocelis, now *Gella*, at the mouth of the Arabian gulf, or Cane (now cape *Fartaque*) on the coast of Arabia Felix; from whence they sailed in 40 days to Musiris already mentioned. Their homeward voyage began early in the month of December; when setting sail with a north-east wind, and meeting with a south or south-west one when they entered the Arabian gulf, the voyage was completed in less than a year. With regard to the situation of Musiris, as well as of Barace another Indian port to which the ancients traded, Major Rennel is of opinion, and Dr Robertson agrees with him, that they stood somewhere between Goa and Tellicherry; and that probably the modern Meerzaw or Merjee is the Musiris, and Barcelore the Barace of the ancients.

India.

19
**New routes
to India dis-
covered by
Hippalus.**

Ptolemy, who flourished about 200 years after the commencement of the Christian era, having the advantage of so many previous discoveries, gives a more particular description of India than what is to be met with in any of the ancient writers; notwithstanding which, his accounts are frequently inconsistent not only with modern discoveries, but with those of more ancient geographers than himself. A most capital error in his geography is, that he makes the peninsula of India stretch from the Sinus Barygazenus, or gulf of Cambay, from west to east, instead of extending, according to its real direction, from north to south; and this error must appear the more extraordinary, when we consider that Megasthenes had published a measurement of this peninsula.

India.

peninsula nearly consonant to truth, which had been adopted with some variations by Eratosthenes, Strabo, Diodorus Siculus and Pliny. His information concerning the situation of places, however, was much more accurate. With respect to some districts on the eastern part of the peninsula, as far as the Ganges, he comes nearer the truth than in his descriptions of any of the rest. These are particularly pointed out by M. D'Anville, who has determined the modern names of many of Ptolemy's stations, as Kilkare, Negapatam, the mouth of the river Cauveri, Masulipatam, &c. The river Cauveri is the *Chabaris* of Ptolemy; the kingdom of Arcot, *Arcati Regio*; and probably, says Dr Robertson, the whole coast has received its present name of Coromandel from *Sor Mandulam*, or the kingdom of Soraz, which is situated upon it. Ptolemy had likewise acquired so much knowledge concerning the river Ganges, that he describes six of its mouths, though his delineation of that part of India which lies beyond the Ganges is hardly less erroneous than that of the nearer peninsula. M. D'Anville, however, has been at great pains to elucidate these matters, and to illustrate those parts of the writings of Ptolemy which appear to be best founded. According to him, the golden Chersonesus of Ptolemy is the peninsula of Malacca; he supposes the gulf of Siam to be the great bay of Ptolemy; and the Sine Metropolis of the same writer he looks upon to be Sin-hoa in the western part of the kingdom of Cochin China, though Ptolemy has erred in its situation no less than 50 degrees of longitude and 20 of latitude. M. Gosselin, however, differs from his countryman M. D'Anville, in a late work entitled "The Geography of the Greeks analysed; or the systems of Eratosthenes, Strabo, and Ptolemy, compared with each other, and with the knowledge which the moderns have acquired." In the opinion of M. Gosselin, the *Magnum Promontorium* of Ptolemy is not Cape Romania at the southern extremity of the peninsula of Malacca, as M. D'Anville supposes, but the point Bragu, at the mouth of the river Ava. The great bay of Ptolemy he supposes not to be the gulf of Siam, but of Martaban. He endeavours to prove that the position of Cattipnara, as laid down by Ptolemy, corresponds with that of Mergui, a sea-port on the west of Siam; and that *Thine*, or *Sine Metropolis*, is not Sin-hoa, but Tana-serim, a city on the same river with Mergui; and he contends, that the Ibbadii insula of Ptolemy is not Sumatra, as D'Anville would have it, but one of the small isles which lie in a cluster off this coast. M. Gosselin is of opinion that the ancients never sailed through the straits of Malacca, nor had any knowledge of the island of Sumatra, or of the eastern ocean.

The errors of Ptolemy have given occasion to a mistake of more modern date, viz. that the ancients were acquainted with China. This arose from the resemblance betwixt the name of that empire and the *Sine* of the ancients. The Ayeen Akbery informs us, that *Cheem* was an ancient name of Pegu; whence, says Dr Robertson, "as that country borders upon Ava, where M. Gosselin places the great promontory, this near resemblance of names may appear perhaps to confirm his opinion that Sine Metropolis was situated on this coast, and not so far east as M. D'Anville has placed it."

Thus we see that the peninsula of Malacca was in all probability the boundary of the ancient discoveries by sea; but by land they had correspondence with countries still farther distant. While the Seleucidæ continued to enjoy the empire of Syria, the trade with India continued to be carried on by land in the way already mentioned. The Romans having extended their dominions as far as the river Euphrates, found this method of conveyance still established, and the trade was by them encouraged and protected. The progress of the caravans being frequently interrupted by the Parthians, particularly when they travelled towards those countries where silk and other of the most valuable manufactures were procured, it thence became an object to the Romans to conciliate the friendship of the sovereigns of those distant countries. That such an attempt was actually made, we know from the Chinese historians, who tell us, that *Antoun*, by whom they mean the Emperor Marcus Antoninus, the king of the people of the western ocean, sent an embassy to Ounti, who reigned in China in the 166th year of the Christian era; but though the fact is mentioned, we are left entirely in the dark as to the issue of the negotiations. It is certain, however, that during the times of the Romans such a trade was carried on; and as we cannot suppose all those who visited that distant region to be entirely destitute of science, we may reasonably enough conclude, that by means of some of these adventurers, Ptolemy was enabled to determine the situation of many places which he has laid down in his geography, and which correspond very nearly with the observations of modern times.

With regard to the Indian islands, considering the few Indian little way they extended their navigation, they could not be acquainted with many of them. The principal one was that of Ceylon, called by the ancients *Taprobane*. The name was entirely unknown in Europe before the time of Alexander the Great; but that conqueror, though he did not visit, had some how or other heard of it; with regard to any particulars, however, he seems to have been very slenderly informed; and the accounts of ancient geographers concerning it are confused and contradictory. Strabo says, it is as large as Britain, and situated at the distance of seven days according to some reports, or 20 days sailing according to others, from the southern extremity of the peninsula. Pomponius Mela is uncertain whether to consider Taprobane as an island, or the beginning of another world; but inclines to the latter opinion, as nobody had ever sailed round it. The account of Pliny is still more obscure; and by his description he would make us believe, that it was seated in the southern hemisphere beyond the tropic of Capricorn. Ptolemy places it opposite to Cape Comorin, at no great distance from the continent; but errs greatly with regard to its magnitude, making it no less than 15 degrees in length from north to south. And Agathemarus, who wrote after Ptolemy, makes Taprobane the largest island in the world, assigning the second place to Britain. From these discordant accounts, some learned men have supposed that the Taprobane of the ancients is not Ceylon, as is generally believed, but the island of Sumatra; though the description of it by Ptolemy, with the figure delineated in his maps, seems to put it beyond a doubt, that Ceylon, and not

India.

21
Boundary
of the na-
vigation
of the an-
cients.

23

covered by
the an-
cients.

²³ ^{India.} Sumatra, is the island to which Ptolemy applies the designation of Taprobane. The other islands described by that geographer to the eastward of Taprobane, are, according to Dr Robertson, those called *Andaman* and *Nicobar* in the gulf of Bengal.

From the time of Ptolemy to that of the Emperor Justinian, we have no account of any intercourse of the Europeans with India, or of any progress made in the geographical knowledge of the country. Under that emperor one Cosmas, an Egyptian merchant, made some voyages to India, whence he acquired the surname of *Indicopleustes*. Having afterwards turned monk, he published several works; one of which, named *Christian Topography*, has reached us. In this, though mixed with many strange reveries, he relates with great simplicity and appearance of truth what he had seen in his travels or had learned from others. He describes several places on the western coast of the hither peninsula, which he calls the chief seat of the pepper-trade; and from one of the ports on that coast named *Male*, Dr Robertson thinks that the name *Malabar* may probably be derived, as well as that of *Maldives* given to a cluster of islands lying at no great distance. Cosmas informs us also, that in his time the island of Taprobane had become a great staple of trade. He supposed it to lie about half way betwixt the Persian Gulf and the country of the Sinæ; in consequence of which commodious situation it received the silk of the Sinæ, and the precious spices of the remote regions of the east, which were from thence conveyed to all parts of India, Persia, and the Arabian Gulf. He calls it not *Taprobane*, but *Sieklibia*, derived from *Selendib*, or *Scendib*, the same by which it is still known all over the east. From him also we learn, that the Persians having overthrown the empire of the Parthians, applied themselves with great diligence and success to maritime affairs; in consequence of which they became formidable rivals to the Romans in the India trade. The latter finding themselves thus in danger of losing entirely that lucrative branch, partly by reason of the rivalry just mentioned, and partly by reason of the frequent hostilities which took place betwixt the two empires, formed a scheme of preserving some share of the trade by means of his ally the emperor of Abyssinia. In this he was disappointed, though afterwards he obtained his end in a way entirely unexpected. This was by means of two monks who had been employed as missionaries in different parts of the east, and had penetrated as far as the country of the Seres or China. From thence, induced by the liberal promises of Justinian, they brought a quantity of the eggs of the silk-worms in an hollow cane. They were then hatched by the heat of a dunghill; and being fed with the leaves or the mulberry, worked and multiplied as well as in those countries of which they are natives. Vast numbers were soon reared in Greece; from whence they were exported to Sicily, and from thence to Italy; in all which countries silk-manufactures have since been established.

²⁴ ^{Silk-worms introduced into Europe.} On the conquest of Egypt by the Saracens in the year 640, the India-trade was of course transferred to them; and they soon began to pursue it with much more vigour than the Romans had done. The city of Bassora was built by the Khalif Omar upon the western banks of the great river formed by the union

of the Euphrates with the Tigris. Thus the command of both rivers was secured, and the new city soon became a place of such consequence as scarce to yield to Alexandria itself. Here Dr Robertson takes notice, that from the evidence of an Arabian merchant who wrote in the year 851, it appears, that not only the Saracens, but the Chinese also, were destitute of the mariner's compass; contrary to the general opinion, that this instrument was known in the east long before it made its appearance in Europe. From this relation, as well as much concurring evidence, says our author, "it is manifest, that not only the Arabians but the Chinese were destitute of this faithful guide, and that their mode of navigation was not more adventurous than that of the Greeks and Romans. They steered servilely along the coast, seldom stretching out to sea so far as to lose sight of land; and as they shaped their course in this timid manner, their mode of reckoning was defective, and liable to the same errors with that of the Greeks and Romans." Notwithstanding this disadvantage, however, they penetrated far beyond Siam, which had set bounds to the navigation of the Europeans. They became acquainted with Sumatra and other India islands; extending their navigation as far as the city of Canton in China. A regular commerce was now carried on from the Persian Gulf to all the countries lying betwixt it and China, and even with China itself. Many Saracens settled in India properly so called, and in the countries beyond it. In the city of Canton particularly, they were so numerous, that the emperor permitted them to have a cadi or judge of their own religion; the Arabian language was understood and spoken in every place of consequence; and ships from China are even said to have visited the Persian Gulf.

²⁵ ^{State of India when visited by the Arabians.} According to the Arabian accounts of those days, the peninsula of India was at that time divided into four kingdoms. The first was composed of the provinces situated on the Indus and its branches, the capital of which was Moultan. The second had the city of Canoge, which, from the ruins of it remaining at this day, appears to have been a very large place. The Indian historians relate, that it contained 30,000 shops in which betel-nut was sold, and 60,000 sets of musicians and singers who paid a tax to government. The third kingdom was that of Cachemire, first mentioned by Massoudi, who gives a short description of it. The fourth kingdom, Guzerat, represented by the same author as the most powerful of the whole. Another Arab writer, who flourished about the middle of the 14th century, divides India into three parts; the northern, comprehending all the provinces on the Indus; the middle extending from Guzerat to the Ganges; and the southern, which he denominates Comar, from Cape Comorin.

From the relation of the Arabian merchant above mentioned, explained by the commentary of another Arabian who had likewise visited the eastern parts of Asia, we learn many particulars concerning the inhabitants of these distant regions at that time, which correspond with what is observed among them at this day. They take notice of the general use of silk among the Chinese; and the manufacture of porcelain, which they compare to glass. They also describe the tea plant, with the manner of using its leaves; whence it appears.

India.

appears, that in the ninth century the use of this plant in China was as common as it is at present. They mention likewise the great progress which the Indians had made in astronomy; a circumstance which seems to have been unknown to the Greeks and Romans: they assert, that in this branch of science the Indians were far superior to the most enlightened nations of the west, on which account their sovereign was called the "King of wisdom." The superstitions, extravagant penances, &c. known to exist at this day among the Indians, are also mentioned by those writers; all which particulars manifest that the Arabians had a knowledge of India far superior to that of the Greeks or Romans. The zeal and industry of the Mohammedans in exploring the most distant regions of the east was rivalled by the Christians of Persia, who sent missionaries all over India and the countries adjoining, as far as China itself. But while the western Asiatics thus kept up a constant intercourse with these parts, the Europeans had in a manner lost all knowledge of them. The port of Alexandria, from which they had formerly been supplied with the Indian goods, was now shut against them; and the Arabs, satisfied with supplying the demands of their own subjects, neglected to send any by the usual channels to the towns on the Mediterranean. The inhabitants of Constantinople and some other great towns were supplied with Chinese commodities by the most tedious and difficult passage imaginable. The silk of that country was purchased in the most westerly province named Chenü; from thence it was conveyed by a caravan, which marched 80 or 100 days, to the banks of the Oxus. Here it was embarked, and carried down the river to the Caspian sea; whence, after a dangerous voyage across that sea, it was carried up the river Cyrus as far as that river is navigable; after which it was conducted by a land-carriage of five days to the river Phasis, then down that stream into the Euxine, and thence to Constantinople. The passage of goods from Hindostan was less tedious; they being carried either directly to the Caspian or to the river Oxus, but by a passage much shorter than that from China; after which they were conveyed down the Phasis to the Euxine, and thus to Constantinople.

28
Tedious
passage of
Indian
goods to
Europe.

It is evident that a commerce thus carried on must have been liable to a thousand disadvantages. The goods conveyed over such vast tracts of land could not be sold but at a very high price, even supposing the journey had been attended with no danger; but as the caravans were continually exposed to the assaults of barbarians, it is evident that the price must on that account have been greatly enhanced. In spite of every difficulty, however, even this commerce flourished, and Constantinople became a considerable mart for East Indian commodities; and from it all the rest of Europe was chiefly supplied with them for more than two centuries. The perpetual course of hostilities in which the Christians and Mohammedans were during this period engaged, contributed still to increase the difficulty; and it is remarkable, that the more this difficulty increased, the more desirous the Europeans seemed to be of possessing the luxuries of Asia.

About this time the cities of Amalphi and Venice, with some others in Italy, having acquired a greater
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degree of independence than they formerly possessed, began first to exert themselves in promoting domestic manufactures, and then to import the productions of India in much larger quantities than formerly. Some traces of this revival of a commercial spirit, according to Dr Robertson, may be observed from the end of the seventh century. The circumstances which led to this revival, however, are entirely unnoticed by historians; but during the seventh and eighth centuries, it is very probable that no commercial intercourse whatever took place between Italy and Alexandria; for, prior to the period we speak of, all the public deeds of the Italian and other cities of Europe had been written upon paper made of the Egyptian papyrus, but after that upon parchment.

The mutual antipathy which the Christians and Mohammedans bore against each other, would no doubt for a long time retard the progress of commerce between them; but at last the khalifs, perceiving the advantage which such a traffic would be of to their subjects, were induced to allow it, while the eagerness with which the Christians coveted the Indian products and manufactures, prompted them to carry it on. But scarce was the traffic begun, when it seemed in danger of being totally interrupted by the crusades. Notwithstanding the enthusiastic zeal of these adventurers, however, there were many to whom commerce was a greater object than religion. This had always been the case with numbers of the pilgrims who visited the holy places at Jerusalem even before the commencement of the crusades: but these, after they took place, instead of retarding the progress of this kind of commerce, proved the means of promoting it to a great degree. "Various circumstances (says Dr Robertson) concurred towards this. Great armies, conducted by the most illustrious nobles of Europe, and composed of men of the most enterprising spirit in all the kingdoms of it, marched towards Palestine, through countries far advanced beyond those which they left in every species of improvement. They beheld the dawn of prosperity in the republics of Italy, which had begun to vie with each other in the arts of industry, and in their efforts to engross the lucrative commerce with the east. They next admired the more advanced state of opulence and splendor in Constantinople, raised to a pre-eminence above all cities then known by its extensive trade, particularly that which it carried on with India and the countries beyond it. They afterwards served in those provinces of Asia through which the commodities of the east were usually conveyed, and became masters of several cities which had been staples of that trade. They established the kingdom of Jerusalem, which subsisted near 200 years. They took possession of the throne of the Greek empire, and governed it above half a century. Amidst such a variety of events and operations, the ideas of the fierce warriors of Europe gradually opened and improved; they became acquainted with the policy and arts of the people whom they subdued; they observed the sources of their wealth, and availed themselves of all this knowledge. Antioch and Tyre, when conquered by the crusaders, were flourishing cities inhabited by opulent merchants, who supplied all the nations trading in the Mediterranean with the productions of the east; and, as far as can be gathered from incidental occurrences mentioned

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29
Effect of
the Cru-
sades on
the Indian
commerce.

India.

mentioned by the historians of the holy war, who being mostly priests and monks, had their attention directed to objects very different from those relating to commerce, there is reason to believe, that both in Constantinople while subject to the Franks, and in the ports of Syria acquired by the Christians, the long-established trade with the east continued to be protected and encouraged."

Our author next goes on to show in what manner the commerce of the Italian states was promoted by the Crusades, until at last, having entirely engrossed the East India trade, they strove with such eagerness to find new markets for their commodities, that they extended a taste for them to many parts of Europe where they had formerly been little known. The rivalryship of the Italian states terminated at last in a treaty with the sultan of Egypt in 1425, by which the port of Alexandria and others in Egypt were opened to the Florentines as well as the Venetians; and soon after, that people began to obtain a share in the trade to India.

30
How the
Indian
trade was
carried on
in the 14th
century.

The following account of the manner in which the India trade was carried on in the beginning of the 14th century, is given by Marino Sanudo a Venetian nobleman. The merchants of that republic were supplied with the commodities they wanted in two different ways. Those of small bulk and great value, such as cloves, nutmegs, gems, pearls, &c. were carried up the Persian gulf to Bassora, from thence to Bagdad, and afterwards to some port on the Mediterranean. The more bulky goods, such as pepper, cinnamon, and other spices, were brought in the usual manner to the Red Sea, and from thence to Alexandria. The goods brought by land, however, were always liable to be seized by barbarians; and therefore the supply that way was scanty, and the price extravagantly dear, while, on the other hand, the Sultan of Egypt, by imposing duties upon the East India cargoes to the amount of a full third of the value, seemed to render it impossible that the owners should find purchasers for their goods. This, however, was far from being the case; the demand for India goods continually increased; and thus a communication, formerly unknown, betwixt all the nations of Europe, was begun and kept up. All this time, however, there had been no direct communication betwixt Europe and India, as the Mohammedans would never allow any Christian to pass through their dominions into that country. The dreadful incursions and conquests of the Tartars under Jenghiz-khan, however, had so broken the power of the Mohammedans in the northern parts of Asia, that a way was now opened to India through the dominions of these barbarians. About the middle of the 13th century, therefore, Marco Polo, a Venetian, by getting access to the khan of the Tartars, explored many parts of the East which had long been unknown even by name to the Europeans. He travelled through China from Peking on its northern frontier to some of its most southerly provinces. He visited also different parts of Hindostan, and first mentions Bengal and Guzerat by their modern names as great and flourishing kingdoms. He obtained also some account of an island which he called *Zipangri*, and was probably no other than Japan: he visited Java with several of the islands in its neighbourhood, the island of Ceylon, and the coast of Malabar

31
Journey of
Marco
Polo into
the East.

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as far as the gulf of Cambay; to all which he gave the names they have at this day. The discovery of such immense regions unknown before in Europe, furnished vast room for speculation and conjecture; and while the public attention was yet engaged by these discoveries, the destruction of Constantinople by the Turks gave a very considerable turn to the East India commerce, by throwing it almost entirely into the hands of the Venetians. Hitherto the Genoese had rivalled that state in the commerce we speak of, and they had possessed themselves of many important places on the coast of Greece, as well as of the port of Caffa on the Black Sea. Nay, they had even established themselves at Constantinople, in the suburb of Pera, in such a manner as almost entirely to exclude the Greeks themselves from any share in this commerce: but by the destruction of Constantinople they were at once driven out of all these possessions, and so thoroughly humbled, that they could no longer contend with the Venetians as before; so that, during the latter part of the 15th century, that republic supplied the greater part of Europe with the productions of the east, and carried on trade to an extent far beyond what had been known in former times. The mode in which they now carried on this trade was somewhat different from what had been practised by ancient nations. The Tyrians, Greeks, and Romans, had sailed directly to India in quest of the commodities they wanted; and their example has been imitated by the navigators of modern Europe. In both periods the Indian commodities have been paid for in gold and silver; and great complaints have been made on account of the drain of those precious metals, which were thus buried as it were in India, never to return again. The Venetians, however, were exempted from this loss; for having no direct intercourse with India, they supplied themselves from the warehouses they found, in Egypt and Syria, ready filled with the precious commodities they wanted; and these they purchased more frequently by barter than with ready money. Thus not only the republic of Venice, but all the cities which had the good fortune to become emporia for the India goods imported by it, were raised to such a pitch of power and splendor as scarce ever belonged to any European state. The citizens of Bruges, from which place the other European nations were for a long time supplied with these goods, displayed such magnificence in their dress, buildings, and manner of living, as excited even the envy of their queen Joan of Navarre who came to pay them a visit. On the removal of the staple from Bruges to Antwerp, the latter soon displayed the same opulence; and in some cities of Germany, particularly Augsborg, the great mart for Indian commodities in the internal parts of that country, there are examples of merchants acquiring such large fortunes as intitled them to high rank and consideration in the empire. The most accurate method, however, of attaining some knowledge of the profits the Venetians had on their trade, is by considering the rate of interest on money borrowed at that time. This, from the close of the 11th century to the commencement of the 16th, we are told, was no less than 20 per cent. and sometimes more. Even as late as 1500, it was 10 or 12 in every part of Europe. Hence we are to conclude that the profits of such money as

India.

32
Genoese
trade to
India ruined
by the
taking of
Constanti-
nople.

33
Immense
wealth of
the Venetians arising
from their
Indian
commerce.

34
High interest of money in the 15th century.

A a

was

India.

was then applied in trade must have been extremely high; and the condition of the inhabitants of Venice at that time warrants us to make the conclusion. "In the magnificence of their houses (says Dr Robertson), in richness of furniture, in profusion of plate, and in every thing which contributed either towards elegance or parade in their mode of living, the nobles of Venice surpassed the state of the greatest monarch beyond the Alps. Nor was all this display the effect of an ostentatious and inconsiderate dissipation; it was the natural consequence of successful industry, which, having accumulated wealth with ease, is intitled to enjoy it in splendor."

This excessive superiority of wealth displayed by the Venetians could not fail to excite the envy of the other states of Europe. They were at no loss to discover that the East India trade was the principal source from whence their wealth was derived. Some of them endeavoured to obtain a share by applying to the sultans of Egypt and Syria to gain admission into their ports upon the same terms with the Venetians; but either by the superior interest of the latter with those princes, or from the advantages they had of being long established in the trade, the Venetians always prevailed. So intent indeed were the other European powers in obtaining some share of this lucrative commerce, that application was made to the sovereign of Russia to open an intercourse by land with China, though the capitals of the two empires are upwards of 6000 miles distant from each other. This, however, was beyond the power of the Russian prince at that time; and the Venetians imagined that their power and wealth were fully established on the most permanent basis, when two events, altogether unforeseen and unexpected, gave it a mortal blow, from which it never has recovered, or can recover itself. These were the discovery of America and that of the passage to the East Indies by the Cape of Good Hope. The former put Spain in possession of immense treasures; which being gradually diffused all over Europe, soon called forth the industry of other nations, and made them exert themselves in such a manner as of itself must have soon lessened the demand for Indian productions. The discovery of the passage to India by the Cape of Good Hope, however, was the most effectual and speedy in humbling the Venetians. After a tedious course of voyages along the western coast of Africa, continued for near half a century, Vasco de Gama, an active and enterprising Portuguese officer, doubled the Cape of Good Hope, and, coasting along the eastern shore of the continent, sailed next across the Indian ocean, and landed at Calcut on the coast of Malabar, on the 22d of May 1498, ten months and two days after leaving the port of Lisbon. On his arrival in India he was at first received with great kindness by the sovereign of that country, styled the *Samorin*; but afterwards, from what causes we cannot now well determine, the Indian prince suddenly changed his kindness into mortal enmity, and attempted to cut off Gama with his whole party. The Portuguese general, however, found means to escape every plot that was laid against him; and loaded his ships not only with the products of that part of the country, but with many of the valuable products of the more remote regions.

On his return to Portugal, De Gama was received

with all imaginable demonstrations of kindness. The Portuguese nation, may all the nations in Europe, the Venetians alone excepted, rejoiced at the discovery which had been made. The latter beheld in it the certain and unavoidable downfall of their own power; while the Portuguese, presuming upon their right of prior discovery, which they took care to have confirmed by a papal grant, plumed themselves on the thoughts of having the whole Indian commerce centre in their nation. The expectations of the one, and the apprehensions of the other, seemed at first to be well founded. A succession of gallant officers sent into the east from Portugal accomplished the greatest and most arduous undertakings. In 24 years after the voyage of De Gama, they had made themselves masters of many important places in India; and among the rest of the city of Malacca, where the great staple of trade throughout the whole East Indies was established. As this city stands nearly at an equal distance from the eastern and western extremities of all the countries comprehended under the name of *Indies*, it was frequented by the merchants of China, Japan, of all the kingdoms on the continent, the Moluccas and other islands in that quarter, as well as by those of Malabar, Ceylon, Coromandel, and Bengal. Thus the Portuguese acquired a most extensive influence over the internal commerce of India; while, by the settlements they had formed at Goa and Diu, they were enabled to engross the trade on the Malabar coast, and greatly to obstruct the long established intercourse of Egypt with India by the way of the Red Sea. Their ships now frequented every port in the east where any valuable commodities were to be had, from the cape of Good Hope to the river of Canton in China; and all along this immense extent, of more than 4000 leagues, they had a chain of forts and factories established for the convenience of protecting their trade. They had likewise made themselves masters of several stations favourable to commerce along the southern coast of Africa, and in many islands lying between Madagascar and the Moluccas. In all places where they came, their arms had struck such terror, that they not only carried on their trade without any rival or control, but even prescribed to the natives the terms of their mutual intercourse; nay, sometimes they set what price they pleased upon the commodities they purchased, and thus were enabled to import into Europe the Indian commodities in greater abundance and at a lower rate than had ever been done before. Not satisfied with this, they formed a scheme of excluding all other nations from any share of the trade they enjoyed; and for that purpose determined to make themselves masters of such stations on the Red Sea and Persian Gulf as might put them in possession of the navigation of both these seas, and enable them not only to obstruct the ancient commerce between Egypt and India, but to command the mouths of the great rivers which we have formerly mentioned as the means of conveying the Indian goods through the internal parts of Asia. The conduct of these enterprises was committed to Alphonso Albuquerque, the most distinguished officer at that time in the Portuguese service. By reason of the vast number of the enemies he had to contend with, however, and the scanty supplies which could be derived from Portugal, he could not fully accomplish what was expected from

India.

36
Exploit of
the Portu-
guese in
India.

35
The Venetian trade
ruined by
the discovery of the
Cape of
Good
Hope.

Inds. from him. However, he took from the petty princes who were tributaries to the kings of Persia the small Island of Ormus, which commanded the mouth of the Persian Gulf; and thus secured to Portugal the possession of that extensive trade with the east which the Persians had carried on for several centuries. On this barren island, almost entirely covered with salt, and so hot that the climate can scarcely be borne, destitute of a drop of fresh water, except what was brought from the continent, a city was erected by the Portuguese, which soon became one of the chief seats of opulence, splendor, and luxury, in the eastern world. In the Red Sea the Arabian princes made a much more formidable resistance; and this, together with the damage his fleet sustained in that sea, the navigation of which is always difficult and dangerous, obliged Albuquerque to retire without effecting any thing of importance. Thus the ancient channel of conveyance still remained open to the Egyptians; but their commerce was greatly circumscribed and obstructed by the powerful interest of the Portuguese in every port to which they had been accustomed to resort.

³⁷ *Intellectual struggles of the Venetians to retrieve their affairs.* The Venetians now began to feel those effects of De Gama's discovery which they had dreaded from the beginning. To preserve the remains of their commerce, they applied to the sultan of the Mameluks in Egypt, who was no less alarmed than themselves at the loss of such a capital branch of his revenue as he had been accustomed to derive from the India trade. By them this fierce and barbarous prince was easily persuaded to send a furious manifesto to Pope Julius II. and Emmanuel king of Portugal. In this, after stating his exclusive right to the Indian trade, he informed them, that if the Portuguese did not relinquish that new course of navigation by which they had penetrated into the Indian ocean, and cease from encroaching on that commerce which from time immemorial had been carried on between the east of Asia and his dominions, he would put to death all the Christians in Egypt, Syria and Palestine, and demolish the holy sepulchre itself. To this threat, which some centuries before would have alarmed all Christendom, no regard was paid; so that the Venetians, as their last resource, were obliged to have recourse to a different expedient. This was to excite the sultan to fit out a fleet in the Red Sea to attack the Portuguese, and drive them from all their settlements in the east; nay, in order to assist him in the enterprise, he was allowed to cut down their forests in Dalmatia, to supply the deficiency of Egypt in timber for ship-building. The timber was conveyed from Dalmatia to Alexandria; and from thence, partly by water and partly by land, to Suez; where twelve men of war were built, on board which a body of Mameluks were ordered to serve under the command of an experienced officer. Thus the Portuguese were assailed by a new enemy far more formidable than any they had yet encountered; yet such was the valour and conduct of the admiral, that after several severe engagements, the fleet of the infidels was entirely ruined, and the Portuguese became absolute masters of the Indian ocean.

This disaster was followed in no long time by the total overthrow of the dominion of the Mameluks in Egypt by Selim the Turkish sultan; who thus also became master of Syria and Palestine. As his interest

was now the same with that of the Venetians, a league was quickly formed betwixt them for the ruin of the power of the Portuguese in India. With this view Selim confirmed to the Venetians the extensive commercial privileges they enjoyed under the government of the Mameluks; publishing at the same time an edict, by which he permitted the free entry of all the productions of the east imported directly from Alexandria into any part of his dominions, but imposed heavy taxes upon such as were imported from Lisbon. All this, however, was insufficient to counteract the great advantages which the Portuguese had obtained by the new passage to India, and the settlements they had established in that country; at the same time that the power of the Venetians being entirely broken by the league of Cambray, they were no longer able to contribute any assistance. They were therefore reduced to the necessity of making an offer to the king of Portugal to purchase all the spices imported into Lisbon, over and above what might be requisite for the consumption of his own subjects. This offer being rejected, the Portuguese for some time remained uncontrolled masters of the Indian trade, and all Europe was supplied by them, excepting some very inconsiderable quantity which was imported by the Venetians through the usual channels.

³⁸ *Why the Portuguese trade was not interrupted by other European powers.* The Portuguese continued to enjoy this valuable branch of commerce undisturbed almost for a whole century; to which, however, they were indebted more to the political situation of the different European nations than to their own prowess. After the accession of Charles V. to the throne of Spain, that kingdom was either so much engaged in a multiplicity of operations, owing to the ambition of that monarch and his son Philip II. or so intent on prosecuting the discoveries and conquests in the new world, that no effort was made to interfere with the East India trade of the Portuguese, even though an opportunity offered by the discovery of a second passage by sea to the East Indies through the straits of Magellan. By the acquisition of the crown of Portugal in 1580, Spain, instead of becoming the rival, became the protector and guardian of the Portuguese trade. The resources of France all this time were so much exhausted by a continuance of long and desolating wars, that it could bestow neither much attention on objects at such a distance, nor engage in any expensive scheme. England was desolated by the ruinous wars between the houses of York and Lancaster; and afterwards its enterprising spirit was restrained by the cautious and covetous Henry VII. His son Henry VIII. in the former part of his reign, by engaging in the continental quarrels of the European princes, and in the latter part by his quarrel with the pope and contests about religion, left no time for commercial schemes. It was not therefore till the reign of Queen Elizabeth that any attention was paid to the affairs of the East by that kingdom. The first who shook the power of the Portuguese in India were the Dutch; and in this they were gladly seconded by the natives, whom the Portuguese had most grievously oppressed. The English soon followed their example; and in a few years the Portuguese were expelled from their most valuable settlements, while the most lucrative branches of their trade have continued ever since in the hands of those two nations.

India,
39
Rivalship
of the
French and
English in
the East
Indies.

40
English set-
tlements in
India.

It is not to be supposed that the other European nations would sit still and quietly see these two engross the whole of this lucrative commerce without attempting to put in for a share. East India companies were therefore set up in different countries: but it was only between France and Britain that the great rivalry commenced; nor did this fully display itself till after the peace of Aix la Chapelle. Both nations had by this time made themselves masters of considerable settlements in India. The principal of those belonging to Britain were, 1. Surat, situated on the western side of the peninsula within the Ganges, between the 21st and 22d degrees of N. Lat. This peninsula comprehended the kingdoms of Malabar, Decan, Golconda, and Bijnagar, with the principalities of Gingi, Tanjour, and Madura; the western coast being distinguished by the name of Malabar, and the eastern by that of Coromandel. 2. Bombay, a small island in the kingdom of Decan, about 45 leagues to the south of Surat. 3. Dabul, about 40 leagues farther to the south, in the province of Cuncan. 4. Carwar, in N. Lat. 15°, where there was a small fort and factory. 5. Tillicherry, to which place the English trade was removed from Calcut, a large town 15 leagues to the southward. 6. Anjengo, between eight and nine degrees of latitude, the most southerly settlement on the western coast of the peninsula. 7. On the Coromandel coast they possessed Fort St David's, formerly called Tegapatan, situated in the kingdom of Gingi, in 11° 40' N. Lat. 8. Madras, the principal settlement on this coast, between 13° and 14° N. Lat. not far from the diamond mines of Golconda. 9. Visigapatam, farther to the north. 10. Balasore, in latitude 22°, a factory of small consequence. 11. Calcutta, the capital of all the British settlements in the East Indies. These were the principal places belonging to Britain which we shall have occasion to mention in the account of the contests which now took place; those of the French were chiefly Pondichery and Chandernagore.

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Origin of
the East In-
dian war
betwixt the
French and
English in
1747.

The war is said to have been first occasioned by the intrigues of the French commandant M. Dupleix; who, immediately after the peace of Aix la-Chapelle, began to sow dissension among the nabobs, who had by this time usurped the sovereignty of the country. Nizam Almuluck, viceroy of Decan, and nabob of Arcot, had, as officer for the Mogul, nominated Anaverdy Khan to be governor of the Carnatic, in the year 1745. On the death of Nizam, his second son Nazir-zing was appointed to succeed him in his viceroyalty, and his nomination was confirmed by the Mogul. He was opposed by his cousin Muzaphier-zing, who applied to Dupleix for assistance. By him he was supplied with a body of Europeans and some artillery; after which, being also joined by Chunda Saib, an active Indian prince, he took the field against Nazir-zing. The latter was supported by a body of British troops under Colonel Laurence; and the French, dreading the event of an engagement, retired in the night; so that their ally was obliged to throw himself on the clemency of Nazir-zing. His life was spared, though he himself was detained as a state prisoner: but the traitor, forgetting the kindness showed him on this occasion, entered into a conspiracy against the life of Nazir-zing, and murdered him in his camp; in which infamous transaction

he was encouraged by Dupleix and Chunda Saib, who had retired to Pondicherry. Immense riches were found in the tents of Nazir-zing, great part of which fell to the share of Dupleix, whom Muzapher-zing now associated with himself in the government. By virtue of this association the Frenchman assumed the state and formalities of an eastern prince; and he and his colleague Muzapher-zing appointed Chunda Saib nabob of Arcot. In 1749, Anaverdy Khan had been defeated and killed by Muzapher-zing and Chunda Saib, assisted by the French; after which his son Mohammed Ali Khan had put himself under the protection of the English at Madras, and was confirmed by Nazir-zing as his father's successor in the nabobship or government of Arcot. This government therefore was disputed betwixt Mohammed Ali Khan, appointed by the legal viceroy Nazir-zing, and supported by the English company, and Chunda Saib nominated by the usurper Muzapher-zing, and protected by Dupleix, who commanded at Pondicherry. Muzapher-zing, however, did not long enjoy his ill-got authority; for in the year 1751, the nabobs who had been the means of raising him to the power he enjoyed, thinking themselves ill rewarded for their services, fell upon him suddenly, defeated his forces, and put him to death; proclaiming Salabat-zing next day viceroy of the Deccan. On the other hand, the Mogul appointed Gauzedy Khan, the elder brother of Salabat-zing; who was confirmed by Mohammed Ali Khan in the government of Arcot: but the affairs of the Mogul were at that time in such disorder, that he could not with an army support the nomination he had made. Chunda Saib in the mean time determined to recover by force the nabobship of Arcot, from which he had been deposed by the Mogul, who had placed Anaverdy Khan in his room. With this view he had recourse to Dupleix at Pondicherry, who reinforced him with 2000 Sepoys, 60 *Caffres*, and 420 French; upon condition that if he succeeded, he should cede to the French the town of Velur in the neighbourhood of Pondicherry, with its dependencies, consisting of 45 villages. Thus reinforced, he defeated Anaverdy Khan who lost his life in the engagement, reassumed the government of Arcot, and punctually performed the engagements he had come under to his French allies.

All this time Mohammed Ali Khan had been supported by the English, to whom he fled after his father's death. By them he was supplied with a reinforcement of men, money, and ammunition, under the conduct of Major Laurence, a brave and experienced officer. By means of this supply he gained some advantages over the enemy; and repairing afterwards to Fort St David's, he obtained a farther reinforcement. With all this assistance, however, he accomplished nothing of any moment; and the English auxiliaries, having retired, he was defeated by his enemies. Thus he was obliged to enter into a more close alliance with the English, and cede to them some commercial points which had been long in dispute; after which, Captain Cope was dispatched to put Trinchinopoli in a state of defence, while captain de Gingis, a Swiss officer, marched at the head of 400 Europeans to the assistance of the nabob. On this occasion Mr Clive first offered his service in a military capacity. He had been employed before as a writer, but appeared very little

India.

42
Mr Clive's
first ap-
pearance in a
military
capacity.
little

India.

In his.

43
His bravery and success.

little qualified for that or any other department in civil life. He now marched towards Arcot at the head of 210 Europeans and 500 Sepoys. In his first expedition he displayed at once the qualities of a great commander. His movements were conducted with such secrecy and dispatch, that he made himself master of the enemy's capital before they knew of his march; and gained the affections of the people by his generosity, in affording protection without ransom. In a short time, however, he found himself invested in Fort St David's by Rajah Saib, son to Chunda Saib, an Indian chief, pretender to the nabobship of Arcot, at the head of a numerous army; the operations of the siege being conducted by European engineers. Thus, in spite of his utmost efforts, two practicable breaches were made, and a general assault given; but Mr Clive having got intelligence of the intended attack, defended himself with such vigour, that the assailants were every where repulsed with loss, and obliged to raise the siege with the greatest precipitation. Not contented with this advantage, Mr Clive, being reinforced by a detachment from Trichinopoly, marched in quest of the enemy; and having overtaken them in the plains of Arani, attacked and entirely defeated them on the 3d of December 1751.

This victory was followed by the surrender of the forts of Timery, Conjaveram, and Arani; after which Mr Clive returned in triumph to Fort St David's. In the beginning of the year 1752 he marched towards Madras, where he was reinforced by a small body of troops from Bengal. Though the whole did not exceed 300 Europeans, with as many natives as were sufficient to give the appearance of an army, he boldly proceeded to a place called *Koveripauk*, about 15 miles from Arcot, where the enemy lay to the number of 1500 Sepoys, 1700 horse, with 150 Europeans, and eight pieces of cannon. Victory was long doubtful, until Mr Clive having sent round a detachment to fall upon the rear of the enemy while the English attacked the entrenchments in front with their bayonets, a general confusion ensued, the enemy were routed with considerable slaughter, and only saved from total destruction by the darkness of the night. The French to a man threw down their arms, and surrendered themselves prisoners of war; all the baggage and cannon falling at the same time into the hands of the victors.

44
His exploits under major Laurence.

On the return of Mr Clive to Fort St David's, he was superseded in the command by Major Laurence. By him he was detached with 400 Europeans, a few Mahratta soldiers, and a body of Sepoys, to cut off the enemy's retreat to Pondicherry. In this enterprise he was attended with his usual good success, took several forts, vanquished the French commander M. d'Anteuil, and obliged him with all his party to surrender prisoners of war.

45
Death of Chunda Saib.

Chunda Saib, in the mean time, lay encamped with an army of 30,000 men at Syringham, an island in the neighbourhood of Trichinopoly; but Major Laurence having found means to intercept his provisions, he was obliged to fly. Being obliged to pass through the camp of the Tanjore general, he obtained a pass for the purpose; but was nevertheless detained by the nabob; who was an ally of the English, and his head

was struck off, in order to prevent any disputes that might arise concerning him.

After the flight of Chunda Saib, his army was attacked and routed by Major Laurence; and the island of Syringham surrendered, with about 1000 French soldiers under the command of Mr Law, brother to him who schemed the Mississippi company. M. Dupleix, exceedingly mortified at this bad success, proclaimed Rajah Saib, son to Chunda Saib, nabob of Arcot; and afterwards produced forged commissions from the Great Mogul, appointing him governor of all the Carnatic from the river Krittah to the sea. The better to carry on this deception, a messenger pretended to come from Delhi, and was received with all the pomp of an ambassador from the Great Mogul. Dupleix, mounted on an elephant, and preceded by music and dancing women, after the oriental fashion, received his commission from the hands of this impostor; after which he affected the state of an eastern prince, kept his *darbar* or court, appeared sitting cross-legged on a sofa, and received presents, as sovereign of the country, from his own council as well as from the natives.

46
M. Dupleix pretends commissions from the Mogul, and affects the state of an Indian prince.

Thus the forces of the English and French East India companies were engaged in a course of hostilities at a time when no war existed between the two nations; and while they thus continued to make war upon each other under the title of auxiliaries to the contending parties, Gauzedy Khan took possession of the dignity appointed him by the Mogul; but had not been in possession of it above 14 days when he was poisoned by his own sister. His son Seah Abadin Khan was appointed to succeed him by the Mogul; but the latter being unable to give him proper assistance, Salabat-zing remained without any rival, and made a present to the French commander of all the English possessions to the northward.

Thus concluded the campaign of 1752. Next year both parties received considerable reinforcements; the English, by the arrival of Admiral Watson with a squadron of ships of war, having on board a regiment commanded by Colonel Aldercroon; and the French by M. Gadeheu, commissary and governor-general of all their settlements, on whose arrival M. Dupleix departed for Europe. The new governor made the most friendly proposals; and desired a cessation of arms until the disputes could be adjusted in Europe. These proposals being readily listened to on the part of the English, deputies were sent to Pondicherry, and a provisional treaty and truce were concluded, on condition that neither of the two companies should for the future interfere in any of the differences that might take place in the country. The other articles related to the places or settlements that should be retained or possessed by the respective companies, until fresh orders should arrive from the courts of London and Versailles; and till then it was stipulated; that neither of the two nations should be allowed to procure any new grant or cession, or to build forts in defence of any new establishment; nor should they proceed to any cession, retrocession, or evacuation, of what they then possessed; but every thing should remain on the same footing as formerly.

48
Provisional treaty between the two nations concluded.

The treaty was published on the 11th of January.

1755;:

1755; at the end of which month admiral Watson returned with his Squadron from Bombay, and M. Godeheu returned to France in the beginning of February, leaving M. Leyrit his successor at Pondicherry. M. Buffly, with the Soubahdar Salabat-zing, commanded in the north; and M. de Sauflay was left to command the troops at Siringham. Matters, however, did not long continue in a state of tranquillity. Early in the year it appeared that the French were endeavouring to get possession of all the provinces of the Deccan. M. Buffly demanded the fortrefs of Golconda from Salabat-zing; and M. Leyrit encouraged the phouder or governor who rented Velu to take up arms against the nabob. He even sent 300 French and as many sepoy from Pondicherry to support this rebel, and oppose the English employed by the nabob to collect his revenues from the tributary princes. In this office they had been employed ever since the cessation of hostilities; one half of the revenue being paid to the nabob, and the other to the company, which now involved them in a kind of military expedition into the country of the Polygars, who had been previously summoned to send agents to settle accounts with the nabob. Four of them obeyed the summons; but one *Lachenaig* refused, and it was therefore resolved to attack him. The country was very strong, being almost entirely fortified by nature or art; for it was surrounded by craggy hills detached from one another, and covered with bushes so as to be impassable for any but the natives, who had thrown up works from hill to hill. These works were indeed very rude, being formed of large stones laid upon one another without any cement, and flanked at proper distances by round earthen towers; before the wall was a deep and broad ditch, with a large hedge of bamboes in front, so thick that it could not be penetrated but by the hatchet or by the fire. This was forced, though not without some loss; after which another work of the same kind, but stronger, made its appearance; but this being likewise forced, *Lachenaig* was obliged to submit and pay his tribute.

The English army now marched to Madura, a strong Indian town about 60 miles south of Trinchinopoly. On their approach it submitted without any opposition, and the inhabitants seemed pleased with their change of government. Here a deputation was received from a neighbouring polygar, desiring an alliance, and as a proof of his sincerity making an offer of two settlements on the sea-coast of his country opposite to the island of Ceylon, which would greatly facilitate their future commerce with Tinivelly. Before this time they could not have reached that city but by a circuitous march of 400 or 500 miles; but from the new settlements the distance to Tinivelly was no more than 50 miles, and reinforcements or supplies of any kind might be sent them from Madras or Fort St David in four or five days. This offer being accepted, Colonel Heron, the English commander, marched to attack the governor of Madura, who had fled to a place called *Coilgoody*: on the approach of the English he fled from this place also, leaving the greatest part of his troops to defend the place. The road was so rugged, that the carriages of the cannon broke down; and as the troops were not furnished with scaling ladders, there seemed to be little hope of gaining the place, which

was very strong. The colonel, however, determined to make an assault after the Indian manner, by burning down the gates with bundles of straw; and to encourage his men in this new method of attack, he himself carried the first torch, being followed by Mohammed Issouf, who bore the second. The place was taken and plundered, not sparing even the temples, which inspired the inhabitants with the utmost abhorrence of the victors on account of their contempt of their religion.

After this exploit the army returned to Madura; and a garrison being left in the place, they proceeded to Tinivelly, which submitted without opposition, and owned the jurisdiction of the nabob; though some of the Polygars still evaded payment, and therefore hostilities were commenced against them.

The new expedition was marked by an act of the most disgraceful cruelty at a fort named *Nellecotah*, 40 miles south of Tinivelly. It was fortified by a mud wall with round towers. The assault was made with great resolution, and the troops gained possession of the parapet without being repulsed. On this the garrison called out for quarter, but it was barbarously refused; a general massacre of men, women, and children ensued, only six persons out of 400 being suffered to escape with life.

It now appeared that the revenues collected in this expedition had not been sufficient to defray the expenses of the army; and a report being spread that Salabat-zing was advancing into the Carnatic at the head of his army, along with M. Buffly the French commander, to demand the Mogul's tribute, it was thought proper to recal Colonel Heron to Trinchinopoly. Before this, he had been prevailed on by the Indian chief who accompanied him, to convey to him (*Mazuphe Cawn*) an investiture of the countries of Madura and Tinivelly for an annual rent of 187,500l. sterling. In his way he was likewise induced by the same chief to make an attempt on a strong fort named *Nellyangaville*, situated about 30 miles west of Tinivelly, and belonging to a refractory Polygar. This attempt, however, proving unsuccessful for want of battering cannon, the colonel returned with *Mazuphe Cawn* to Trinchinopoly, where he arrived on the 22d of May 1755.

The last expedition of this commander was against a mud fort named *Volsynatam*, situated near the entrance of the woods belonging to the Collieries. These people were highly incensed at the plundering of *Coilgoody*, and particularly at the loss of their sacred images which the rapacious conquerors had carried off. In consequence of this they had already slaughtered a party of sepoy whom the commanding officer at Madura had sent out to collect cattle. In their march the English army had to go through the pass of *Natam*, one of the most dangerous in the peninsula. It begins about 20 miles north of Trinchinopoly, and continues for six miles through a wood impassable to Europeans. The road which lay through it was barely sufficient to admit a single carriage at a time, at the same time that a bank running along each side rendered it impossible to widen it. In most places the wood was quite contiguous to the road; and even where part of it had been felled, the eye could not penetrate above 20 yards.—A detachment of Europeans, pioneers, and sepoy,

49
Expedition
of the En-
glish into
the country
of the Poly-
gars.

50
Madura
reduced.

51
Two new
settlements
obtained
by the
English.

52
Exploits of
Colonel
Heron.

India
His impru-
dence in
plundering
the Indian
temples.

54
Cruel mas-
sacre at
Nellecotah.

55
Unfortu-
nate expe-
dition and
affair of
Colonel
Heron.

⁵⁶ **India.** sepoy, were sent to scour the woods before the main body ventured to pass through such a dangerous defile. The former met with no opposition, nor did any enemy appear against the latter for a long time. At last the march was stopped by one of the heaviest tumbrils sticking in a slough, out of which the oxen were not able to draw it. The officers of artillery suffered the troops marching before to proceed; and the officer who commanded in the rear of the battalion, not suspecting what had happened, continued his march, while most of the sepoy who marched behind the rear division of the artillery were likewise suffered to pass the carriage in the slough, which choked up the road, and prevented the other tumbrils from moving forward, as well as three field pieces that formed the rear division of artillery, and the whole line of baggage that followed. In this divided and defenceless state the rear division of the baggage was attacked by the Indians; and the whole would certainly have been destroyed, had it not been for the courage and activity of Capt. Smith, who here commanded 40 Caffres and 200 sepoy, with one six-pounder. Considerable damage, however, was done, and the Indians recovered their gods; which certainly were not worth the carrying off, being only made of brass, and of a diminutive size. Colonel Heron was tried by a court-martial for misconduct in this expedition; and being found guilty, was declared incapable of serving the company any longer: soon after which he returned to Europe, and died in Holland.

⁵⁶ Scheme formed by the English against the French.

⁵⁷ The expedition laid aside.

In the mean time Nanderauze, an Indian prince, formed a scheme to get possession of Trinchinopoly; and in order to compass his end with greater facility, communicated his design to M. de Sauffay the commander of the French troops. But this gentleman having communicated intelligence to the English commander, the enterprize miscarried, and no difference betwixt these two rival nations as yet took place. It does not however appear that the English were in the least more solicitous to avoid hostilities than the French; for as soon as the company were informed of the acquisitions made by M. Buffy in the Deccan, it was determined to encourage the Mahrattas to attack Salabat-zing, in order to oblige him to dismiss the French auxiliaries from his service.—In order to succeed in this enterprize, it was necessary to have a commander well experienced in the political systems of the country, as well as in military affairs; and for this purpose Mr Clive, now governor of Fort St David's, and invested with a lieutenant-colonel's commission in the king's troops, offered his service. Three companies of the king's artillery, consisting of 100 men each, and 300 recruits, were sent from England on this expedition, who arrived at Bombay on the 27th of November; when on a sudden the presidency of Madras took it into consideration that this expedition could not be prosecuted without infringing the convention made with the French commander. "This (says Mr Grose) was acting with too much caution; for every thing relating to Salabat-zing and the French troops in his service seemed to have been studiously avoided. The court of directors had explained their whole plan to the presidency of Madras; but the ship which had the letters on board was unfortunately wrecked on a rock about 800 miles east of the Cape of Good Hope." The whole expedition was therefore laid aside, and the presidency of Madras directed all their force for the

present against Tulagee Angria, who had long been a formidable enemy to the English commerce in those parts.

The dominions of this pirate consisted of several islands near Bombay, and an extent of land on the continent about 180 miles in length and from 30 to 60 in breadth. He possessed also several forts that had been taken from the Europeans by his ancestors; the trade of piracy having, it seems, been hereditary in the family, and indeed followed by most of the inhabitants of this coast. This was the more dangerous for trading vessels, as the land breezes do not here extend more than 40 miles out at sea, so that the ships are obliged to keep within sight of land; and there was not a creek, harbour, bay, or mouth of a river along the whole coast of his dominions, where Angria had not erected fortifications, both as stations of discovery, and places of refuge to his vessels. His fleet consisted of two kinds of vessels peculiar to this country, named *grabs* and *gallivats*. The former have generally two masts, though some have three; the latter being about 200 tons burthen, and the former 150. They are built to draw little water, being very broad in proportion to their length; but narrowing from the middle to the end, where, instead of bows, they have a prow projecting like a Mediterranean galley, and covered with a strong deck level with the main deck of the vessel, from which it is separated by a bulk-head that terminates the fore-castle. As this construction subjects the grab to pitch violently when sailing against a head sea, the deck of the prow is not inclosed with sides as the rest of the vessel, but remains bare, that the water which comes upon it may pass off without interruption. Two pieces of cannon are mounted on the main deck under the fore-castle, carrying balls of nine or twelve pounds, which point forwards through port-holes cut in the bulk-head, and fire over the prow; those of the broad-side are from six to nine pounds. The *gallivats* are large row-boats built like the grab, but smaller; the largest scarce exceeding 70 tons burthen. They have two masts, the mizen slightly made, and the main-mast bearing one large and triangular sail. In general they are covered with a spar-deck made of split bamboes, and carry only patereroces fixed on swivels in the gunnel of the vessel; but those of a larger size have a fixed deck, on which they mount six or eight pieces of cannon from two to four pounds. They have 40 or 50 stout oars, by which they may be moved at the rate of four miles an hour.

Angria had commonly a fleet of eight or ten grabs, with 40 or 50 gallivats; which slipped their cables and put out to sea as soon as any vessel had the misfortune to come within sight of the port or bay where they lay. If the wind blew with any strength, their construction enabled them to sail very swiftly: but if it was calm, the gallivats rowed, and towed the grabs. As soon as they came within gunshot of the enemy, they assembled astern, and the grabs began the attack, firing at first only at the masts, and choosing the most advantageous positions for this purpose. If the vessel happened to be dismasted, they then drew nearer, and battered her on all sides till she struck; but if the defence was obstinate, they sent a number of gallivats with two or three hundred soldiers in each, who boarded from all quarters sword in hand.

This piratical state had for more than 50 years been formidable.

⁵⁸ **India.** Account of the pirates Tulagee Angria.

⁵⁹ Description of his fleet.

⁶⁰ Their manner of attacking ships.

India.
61
Unsuccessful attempts to reduce this pirate.

formidable to all the nations in Europe; the English East India company had kept up a naval force for the protection of their trade at the rate of more than 50,000l. annually, and after all found it scarcely adequate to the purpose. An unsuccessful attempt had been made in 1717, by the presidency of Bombay, against the forts Geriah and Kennary, the principal strong holds of Angria.—Another was made in 1722, under Admiral Matthews, against a fort named Coillabley, about 15 leagues south of Bombay: but this also miscarried through the cowardice and treachery of the Portuguese, who pretended to assist the English. In 1735 fort Geriah was unsuccessfully attacked by a Dutch armament of seven ships, two bomb-ketches, and a numerous body of land forces; while all this time the piracies of Angria went on successfully, and not only trading vessels, but even men of war belonging to different nations, were captured by him, particularly in the month of February 1754, when three Dutch ships of 50, 36, and 18 guns, were burnt or taken by the piratical fleet.

62
Success of commodore James against his forts.

This last success encouraged Angria so much, that he began to build vessels of a large size, boasting that he should be master of the Indian seas. The Mahrattas having implored the assistance of the English against this common enemy, Commodore William James was sent from Bombay on the 22d of March 1755, with the Protector of 44, the Swallow of 16 guns, and two bomb-ketches; but with instructions not to hazard the fleet by attacking any of the pirate's forts, only to blockade the harbours, while the Mahratta army carried on their operations by land. He had scarce begun his voyage when he fell in with a considerable fleet of the pirates, which he would certainly have taken, had it not been for the timidity and dilatory behaviour of his allies, who could not by any means be induced to follow him. They had, however, invested three of the forts, but after a very strange manner; for they durst not approach nearer than two miles, and even there entrenched themselves up to the chin, to be secure against the fire of the fort, which they returned only with one four pounder. The commodore, provoked at this pusillanimous behaviour, determined, for the honour of the British arms, to exceed the orders he had got. Running within 100 yards of a fort named Severndroog, he in a few hours ruined the walls, and set it on fire; a powder magazine also blowing up, the people, to the number of about 1000, abandoning the place, and embarking on board of eight large boats, attempted to make their escape to another fort named Gpa, but were all intercepted and made prisoners by the English. The whole force of the attack being then turned upon Goa, a white flag was soon hung out as a signal to surrender. The governor, however, did not think proper to wait the event of a capitulation, but without delay passed over to Severndroog, where he hoped to be able to maintain his ground notwithstanding the ruinous state of the fortifications. The fire was now renewed against this fortress; and the seamen having cut a passage through one of the gates with their axes, the garrison soon surrendered, at the same time that two other forts besieged by the Mahrattas hung out flags of truce and capitulated: and thus were four of Angria's forts, for so many years deemed impregnable, subdued in one day.

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63
The pirate finally subdued by Admiral Watson.

These successes were followed by the surrender of Bancoote, a strong fortified island now called *Fort Victoria*, and which the English retained in possession; but the other forts were delivered up to the Mahrattas. On the arrival of Admiral Watson in the beginning of November 1755, it was determined to root out the pirate at once, by attacking Geriah the capital of his dominions; but it was so long since any Englishmen had seen this place, and the reports of its strength had been so much exaggerated, that it was thought proper to reconnoitre it before any attack was made. This was done by Commodore James; who having reported that the fort, though strong, was far from being inaccessible or impregnable, it was resolved to prosecute the enterprise with the utmost expedition and vigour. It was therefore attacked by such a formidable fleet, that Angria, losing courage at their approach, fled to the Mahrattas, leaving Geriah to be defended by his brother. The fort, however, was soon obliged to surrender, with no more loss on the part of the English than 19 men killed and wounded: but it was afterwards acknowledged, that this success was owing principally to the terror of the garrison occasioned by such a violent cannonade; for their fortifications appeared to have been proof against the utmost efforts of an enemy. All the ramparts of this fort were either cut out of the solid rock, or built of stones at least ten feet long laid edgewise.

In this fortress were found 200 pieces of brass cannon, with six brass mortars, and a great quantity of ammunition and military stores, besides money and effects to the value of 125,000l. Angria's fleet was entirely destroyed, one of the ships having been set on fire by a shell from the English fleet, and the flames having spread from thence to all the rest. About 2000 people were made prisoners; among whom were the wife, children, mother, brother, and admiral of the pirate: but they were treated with the greatest clemency; and his family, at their own request, continued under the protection of the English at Geriah. All the other forts belonging to Angria soon submitted; so that his power on the coast of Malabar was entirely annihilated.

64
M. Buffy dismissed by Salabat-zing.

While the affairs of the English went on thus successfully, M. Buffy had been constantly employed near the person of Salabat-zing, whom he had served in much the same manner that the English had Mahomed Ali Cawn. As he made use of his influence with that prince, however, to enlarge the possessions of the French, and was continually making exorbitant demands upon him, the prime minister of Salabat-zing at length represented to him the danger and shame of allowing a small body of foreigners thus to give law to a great prince; and having formed a powerful combination against the French, at last obtained an order for their dismissal. M. Buffy took his leave without any marks of disgust, having under his command about 600 Europeans, with 5000 sepoy, and a fine train of artillery. His enemies, however, had no mind to allow him to depart in safety; and therefore sent orders to all the Polygars to oppose their passage, sending 6000 Mahrattas after them to harass them on their march.

Notwithstanding this opposition, M. Buffy reached Hyderabad with very little loss. Here he took possession

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session of a garden formerly belonging to the kings of Golconda, where he resolved to keep his post until succours should arrive from Pondicherry and Masulipatam. Here Salabat-zing proposed to attack him; and the better to attain his purpose, applied to the English presidency at Madras for a body of troops to assist him in this service. Nothing could be more agreeable to those who had the power at that place than such an invitation; and a detachment of 400 Europeans and 1500 sepoy was on the point of being ordered to the assistance of Salabat-zing, when express from Bengal informed them of the greatest danger that had ever threatened the British settlements in India.

65
A detachment of English troops ordered against M. Buff, but countermanded.

66
Surajah Dowla, nabob of Bengal, an enemy to the English.

This danger arose from the displeasure of Surajah Dowla the new nabob of Bengal. His grandfather Aliverdy Khan having died in April or May 1756, Surajah succeeded to the nabobship of Bengal, Bahar, and Oriza. He was congratulated on his accession by Mr Drake the English president at Calcutta, who requested his favour and protection in behalf of his countrymen. This was readily promised, even to a greater degree than what had been shown by his grandfather; but in a short time his resentment was incurred by the imprisonment, as it is said, of Omichund, an eminent Gentoo merchant, who had lived several years under the protection of the English government at Calcutta. Of this, however, Surajah Dowla did not directly complain; but founded his pretence of war upon the conduct of the English in repairing the fortifications of Calcutta; which indeed was absolutely necessary on account of the great likelihood of a war with the French. On this account, however, the nabob signified his displeasure, and threatened an attack if the works were not instantly demolished. With this requisition the president and council pretended to comply; but nevertheless went on with their works, applying first to the French and then to the Dutch for assistance; but as neither of these nations thought proper to interfere, the English were obliged to stand alone in the quarrel.

67
His expedition against Calcutta.

Surajah Dowla took the field on the 30th of May 1756, with an army of 40,000 foot, 30,000 horse, and 400 elephants; and on the 2d of June detached 20,000 men to invest the English fort at Cassumbazar, a large town situated on an island formed by the western branch of the Ganges. The fort was regularly built, with 60 cannon, and defended by 300 men, but principally sepoy. The nabob pretending a desire to treat, Mr Watts the chief of the factory was persuaded to put himself in his power; which he had no sooner done, than he was made a close prisoner, along with Mr Batson a surgeon who accompanied him. The two prisoners were treated with great indignity, and threatened with death; but two of the council who had been sent for by the tyrant's command were sent back again, with orders to persuade the people of the factory to surrender it at discretion. This proposal met with great opposition in the council; but was at last complied with, though very little to the advantage of the prisoners; for they were not only deprived of every thing they possessed, but stripped almost naked, and sent to Huquely, where they were closely confined.

The nabob, encouraged by this success, marched
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directly to Calcutta, which he invested on the 15th. Though he now threatened to drive the English entirely out of his dominions, yet he proposed an accommodation with Mr Drake, provided he would pay him his duty upon the trade for 15 years, defray the expenses of his army, and deliver up the Indian merchants who were in the fort. This being refused, a siege commenced, and the place was taken in three days through the treachery of the Dutch guard who had the charge of a gate. The nabob promised on the word of a soldier, that no harm should be done the English; nevertheless they were shut up in a prison so strait, that out of 146 all perished in a single night for want of air but 22. It was not, however, supposed that any massacre at this time was intended; and it is probable that he only gave orders to confine the prisoners closely for the night, without taking into consideration whether the place they were confined in was large or small.

India.

The news of this disaster put an end to the expedition projected against M. Buff; and Colonel Clive was instantly dispatched to Bengal with 400 Europeans and 1000 sepoy, on board of the fleet commanded by Admiral Watson. They did not arrive till the 15th of December, at a village called Fulta, situated on a branch of the Ganges, where the inhabitants of Calcutta had taken refuge after their misfortune. Their first operations were against the forts Bussudgia, Tanna, Fort-William, and Calcutta now in the hands of the enemy. All these were reduced almost as soon as they could approach them. An expedition was then proposed against Huegley, a large town about 60 miles above Calcutta, and the place of rendezvous for all nations who traded to Bengal; its warehouses and shops being always filled with the richest merchandise of the country. This was likewise easily reduced; and the city was destroyed, with the granaries and storehouses of salt seated on each side the river; which proved very detrimental to the nabob, as depriving him of the means of subsistence for his army.

68
Calcutta taken, and a number of prisoners suffocated. See Calcutta.

69
Expedition of admiral Watson and colonel Clive against the nabob.

Surajah Dowla, enraged at this success of the English, now seemed determined to crush them at once by a general engagement. From this, however, he was intimidated by a successful attack on his camp, which soon induced him to conclude a treaty. This took place on the 9th of February 1757, on the following conditions. 1. That the privileges and immunities granted to the English by the king (Mogul) should not be disputed. 2. That all goods with English orders should pass, by land or water, free of any tax, fee, or imposition. 3. All the Company's factories which had been seized by the nabob should be restored; and the goods, money, and effects which had been plundered, should be accounted for. 4. That the English should have permission to fortify Calcutta as they thought proper. 5. They should also have liberty to coin their own imports of bullion and gold.

70
Treaty concluded with him.

As certain intelligence was now received of a war between France and England, the first object that naturally occurred, after the conclusion of this treaty, was the reduction of the French power in the east; in consequence of which it was represented to Admiral Watson, by a committee of the council of Bengal, that this was the only opportunity he perhaps might ever have of acting offensively against them. An attack
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71
War with the French.

India. would therefore immediately have been made on Chandernagore, had not a deputation arrived from that place, requesting a neutrality in this part of the world until matters should be finally decided in Europe. The negociation, however, was broken off on a suggestion that the government of Chandernagore, being subordinate to that of Pondicherry, could not render any transaction of this kind valid. It remained therefore only to obtain the consent of the nabob to make an attack upon this place : but this seemed not likely to be got ; for in ten days after the conclusion of the treaty, he sent a letter to the admiral, complaining of his intention. " It appears (says he) that you have a design to besiege the French factory near Houghley, and to commence hostilities against that nation. This is contrary to all rule and custom, that you should bring your animosities and differences into my country ; for it has never been known, since the days of Timur, that the Europeans made war upon one another in the king's dominions. If you are determined to besiege the French factories, I shall be necessitated, in honour and duty to my king, to assist them with my troops. You are certainly bound to abide by your part of the treaty strictly, and never to attempt or be the occasion of any troubles or disturbances in future within the provinces under my jurisdiction, &c." To this Admiral Watson replied, that " he was ready to desist from his intended enterprize if the French would agree to a solid treaty of neutrality ; or if the nabob, as *soubahdar* (viceroy) of Bengal, would, under his hand, guarantee this treaty, and promise to protect the English from any attempts made by the French against their settlements in his absence." This letter did not prove satisfactory ; the nabob having been informed by the French agent, that the English designed to turn their arms against him as soon as they had made themselves masters of Chandernagore. This was strenuously denied by the admiral ; and a number of letters passed between him and the nabob, in one of which the latter made use of the following expressions, which were supposed to imply a tacit consent that Chandernagore should be attacked. " My forbidding war on my borders was because the French were my tenants, and upon this affair desired my protection : on this I wrote to you to make peace, and no intention had I of favouring or assisting them. You have understanding and generosity : if your enemy with an upright heart claims your protection, you will give him his life ; but then you must be *well* satisfied of the innocence of his intentions ; if not, then whatsoever you think right, that do."

73
Chander-
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English.

Having thus, as was supposed, obtained the consent of the nabob, an attack was made on Chandernagore, which was soon reduced to the necessity of capitulating ; though the French made a gallant defence, and, as Mr Ives informs us, " stood to their guns as long as they had any to fire." A messenger was dispatched with the news to Surajah Dowla three days after the place had surrendered, intimating also that the French had been pursued some way up the country. This intelligence, however, seemed to be by no means agreeable, as he could scarce be induced to return an answer. At last he pretended displeasure on account of the design of the English to infringe the treaties, and complained that they had ravaged some parts of

his dominions. This was denied on the part of the admiral ; who in his turn accused the nabob of breach of promise, and neglect in fulfilling his engagements. The last letter sent by Admiral Watson to the nabob, of date 19th April 1757, concludes in this manner. " Let me again repeat to you, that I have no other views than that of peace. The gathering together of riches is what I despise ; and I call on God, who sees and knows the spring of all our actions, and to whom you and I must one day answer, to witness to the truth of what I now write : therefore, if you would have me believe that you wish for peace as much as I do, no longer let it be the subject of our correspondence for me to ask the fulfilment of our treaty, and you to promise and not perform it ; but immediately fulfil all your engagements : thus let peace flourish and spread throughout all your country, and make your people happy in the re-establishment of their trade, which has suffered by a ruinous and destructive war." From this time both parties made preparations for war. The nabob returned no answer till the 13th of June, when he sent the following declaration of war. " According to my promises, and the agreement made between us, I have duly rendered every thing to Mr Watts, except a very small remainder : Notwithstanding this, Mr Watts, and the rest of the council of the factory at Cassimbuzar, under the pretence of going to take the air in their gardens, fled away in the night. This is an evident mark of deceit, and of an intention to break the treaty. I am convinced it could not have happened without your knowledge, nor without your advice. I all along expected something of this kind, and for that reason I would not recall my forces from Plassey, expecting some treachery. I praise God, that the breach of the treaty has not been on my part," &c.

Nothing less was now resolved on in the English council at Calcutta than the deposition of the nabob ; which at this time appeared practicable, by supporting the pretensions of Meer Jaffier Ali Cawn, who had with other noblemen entered into a conspiracy against him. Meer Jaffier had married the sister of Aliverdy Cawn, the predecessor of Surajah Dowla ; and was now supported in his pretensions by the general of the horse, and by Jugget Seet the nabob's banker, who was reckoned the richest merchant in all India. By these three leading men the design was communicated to Mr Watts the English resident at the nabob's court, and by him to Colonel Clive and the secret committee at Calcutta. The management of the affair being left to Mr Watts and Mr Clive, it was thought proper to communicate the secret to Omichund, through whom the necessary correspondence might be carried on with Meer Jaffier. This agent proved so avaricious, that it was resolved to serve him in his own way ; and by a piece of treachery to him also, to gain their point with both parties. Two treaties were therefore written out ; in one of which it was promised to comply with Omichund's demand, but in the other his name was not even mentioned ; and both these treaties were signed by all the principal persons concerned, Admiral Watson alone excepted, whom no political motives could influence to sign an agreement which he did not mean to keep. These treaties, the same in every respect excepting as to Omichund's affair, were to the following

74
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the nabob
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Avarici-
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India. following purpose: 1. All the effects and factories belonging to the province of Bengal, Bahar, and Orissa, shall remain in possession of the English, nor should any more French ever be allowed to settle in these provinces. 2. In consideration of the losses sustained by the English company by the capture and plunder of Calcutta, he agreed to pay one crore of rupees, or L. 1,250,000 sterling. 3. For the effects plundered from the English at Calcutta, he engaged to pay 50 lack of rupees, or L. 625,000. 4. For the effects plundered from the Gentoos, Moors, and other inhabitants of Calcutta, 20 lack, or L. 250,000. 7. For the effects plundered from the American merchants, inhabitants of Calcutta, seven lack, or L. 87,500. 8. The distribution of all these sums to be left to Admiral Watson, Colonel Clive, Roger Drake, William Watts, James Kilpatrick, and Richard Becher, Esquires, to be disposed of by them to whom they think proper.

77
Surajah Dowla defeated and put to death.

All things being now in readiness, Colonel Clive began his march against Surajah Dowla on the 13th of June, the very day on which Surajah Dowla sent off his last letter for Admiral Watson. Before any act of hostility was committed, however, Colonel Clive wrote the nabob a letter, upbraiding him with his conduct, and telling him at last, that "the rains being so near, and it requiring many days to receive an answer, he had found it necessary to wait upon him immediately." This was followed by the decisive action at Plassey; in which the treachery of Meer Jaffier, who commanded part of the nabob's troops, and stood neuter during the engagement, undoubtedly rendered the victory more easily acquired than it would otherwise have been. The unfortunate nabob fled to his capital with a few that continued faithful to him. He reached the city in a few hours; but not thinking himself safe there, left it the following evening, disguised like a Faquir, with only two attendants. By these he appears to have been abandoned and even robbed; for on the 3d of July he was found wandering forsaken and almost naked on the road to Patna. Next day he was brought back to Muxadabad; and a few hours after privately beheaded by Meer Jaffier's eldest son, to whose care he had been committed. The usurper took possession of the capital in triumph; and on the 29th of June Colonel Clive went to the palace, and in presence of the rajahs and grandees of the court solemnly handed him to the musnud or carpet and throne of state, where he was unanimously saluted soubahdar or nabob, and received the submission of all present.

78
Meer Jaffier proclaimed nabob of Bengal.

79
Colonel Coote's expedition in quest of Mr Law.

While these transactions were going forward with the nabob, the utmost efforts were used to expel the French entirely from Bengal. By the articles of capitulation at Chandernagore, the whole of that garrison were to continue prisoners of war; but about the time of signing the treaty, Mr Law with a small body of troops made his escape out of Cassembuzar, and bent his march towards Patna. There he had been protected by the late nabob; and on the commencement of fresh hostilities, had collected about 200 French, the only remains of that nation in Bengal, to make an attempt to succour him. With these he was within two hours march of Surajah Dowla's camp when the battle of Plassey was fought: on hearing the news of which he stopped; but afterwards being in-

formed of the nabob's escape, he marched again to his assistance, and was within a few hours of joining him when he was taken. Three days after he was pursued by Major Eyre Coote at the head of 223 Europeans, three companies of Sepoys, 50 Lascars or Indian sailors, and 10 Marmutty men or pioneers to clear the roads, together with two pieces of cannon, six pounders. On this expedition the major exerted his utmost diligence to overtake his antagonist, and spent a very considerable space of time in the pursuit; for though he set out on the 6th of July, he did not return to Muxadabad till the 1st of September. Mr Law, however, had the good fortune to escape; but though the major did not succeed in what was proposed as the principal end of his expedition, he was nevertheless, says Mr Ives, of considerable service to the company and to his country in general. He had obliged Ramnarain, the most powerful rajah in the country, to swear allegiance to Meer Jaffier; he laid open the interior state of the northern provinces; and, in conjunction with Mr Johnstone, gave the company some insight into the saltpetre business, from which such advantages have since been derived to the public.

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Before the return of Major Coote, Admiral Pocock had succeeded to the command of the fleet, in consequence of the decease of Admiral Watson, who died on the 16th of August. The joy of the British was considerably damped by the loss of this gentleman, who had gained a great and deserved reputation both in the military line and every other. News were also received, that the French had been very successful on the coast of Coromandel. Salabat-zing, as has already been observed, had applied to the English for assistance against the French; but as they were prevented from performing their agreement by the disaster at Calcutta, he found himself under a necessity of accommodating the differences with his former friends, and to admit them again into his service. M. Bussy was now reinforced by the troops under M. Law; who had collected as many Europeans in his journey as made up 500 with those he had at first. With these he undertook to reduce the English factories of Ingelram, Bandermalanka, and Vizagapatnam. As none of the two former places were in any state of defence, the greatest part of the company's effects were put on shipboard on the first alarm; but as Vizagapatnam was garrisoned by 140 Europeans and 420 Sepoys, it was supposed that it would make some defence. If any was made, however, it appears to have been very trifling; and by the conquest of this the French became masters of all the coasts from Ganjam to Massulipatnam. In the southern provinces the like bad success attended the British cause. The rebel Polygars having united their forces against Mazuphe Cawn, obtained a complete victory over him; after which the English sepoy, being prevailed upon to quit Madura, the conqueror seized upon that city for himself.

80
Death of admiral Watson.

81
Success of the French on the Coromandel coast.

In the beginning of 1758, the French made an attempt on Trinchinopoly. The command was given to M. d'Autreuil, who invested the place with 900 men in battalion, with 4000 sepoy, 100 hussars, and a great body of Indian horse. Trinchinopoly was then in no condition to withstand such a formidable power, as most of the garrison had gone to besiege Madura

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under Captain Caillaud ; but this commander having received intelligence of the danger, marched back with all his forces, and entered the town by a difficult road which the enemy had neglected to guard ; and the French general, disconcerted by this successful manoeuvre, drew off his forces, and returned to Pondicherry.

This fortunate transaction was succeeded by the siege of Madura in which the English were so vigorously repulsed, that Captain Caillaud was obliged to turn the siege into a blockade in order to reduce the place by famine. But before any progress could be made in this way, Mazuphe Cawn was prevailed upon to give it up for the sum of 170,000 rupees. A large garrison of sepoys was again put into the place, and Captain Caillaud returned to Trinchinopoly.

An unsuccessful attempt was now made by Colonel Ford on Nellore, a large town surrounded by a thick mud-wall, with a dry ditch on all sides but one, where there is the bed of a river always dry but in the rainy season. The enterprise is said to have proved unsuccessful through the unheard-of cowardice of a body of sepoys, who having sheltered themselves in a ditch, absolutely refused to stir a step farther, and rather chose to allow the rest of the army to march over them to the assault, than to expose themselves to danger. Several other enterprises of no great moment were undertaken ; but the event was on the whole unfavourable to the English, whose force by the end of the campaign was reduced to 1718 men, while that of the French amounted to 3400 Europeans, of whom 1000 were sent to Pondicherry.

Both parties now received considerable reinforcements from Europe ; Admiral Pocock being joined on the 24th of March by Commodore Stevens with a squadron of five men of war, and the French by nine men of war and two frigates, having on board General Lally with a large body of troops. The English admiral no sooner found himself in a condition to cope with the enemy than he went in quest of them ; and an engagement took place, in which the French were defeated with the loss of 600 killed and a great many wounded, while the English had only 29 killed and 89 wounded. The former returned to Pondicherry, where they landed their men, money, and troops. After the battle three of the British Captains were tried for misbehaviour, and two of them dismissed from the command of their ships. As soon as his vessels were refitted, the admiral sailed again in quest of the enemy, but could not bring them to an action before the 3d of August, when the French were defeated a second time, with the loss of 251 killed and 602 wounded.

Notwithstanding this success at sea, the English were greatly deficient in land forces ; the re-establishment of their affairs in Bengal having almost entirely drained the settlements on the coast of Coromandel of the troops necessary for their defence. The consequence of this was the loss of Fort St David, which General Lally reduced, destroying the fortifications, demolishing also the adjacent villages, and ravaging the country in such a manner as filled the natives with indignation, and in the end proved very prejudicial to his affairs. He proved successful, however, in the reduction of Devicottah, but was obliged to re-

treach with loss from before Tanjore, his army being greatly distressed for want of provisions ; and money in particular being so deficient, that on the 7th of August the French seized and carried into Pondicherry a large Dutch ship from Batavia, bound to Negapatnam, and took out of her about L. 5000 in specie.

From this time the affairs of the French daily declined. On their retreat from Tanjore, they abandoned the island of Seringham ; however, they took Tripassore ; but were defeated in their designs on the important post of Chinglapet, situated about 45 miles south-west of Madras. Their next enterprises on Fort St George and Madras were equally unsuccessful. The latter was besieged from the 12th of December 1758 to the 17th of February 1759, when they were obliged to abandon it with great loss ; which disaster greatly contributed to depress their spirits, and abate those sanguine hopes they had entertained of becoming masters in this part of the world.

The remainder of the year 1759 proved entirely favourable to the British arms. M. d'Ache the French admiral, who had been very roughly handled by Admiral Pocock on the 3d of August 1758, having refitted his fleet, and being reinforced by three men of war at the islands of Mauritius and Bourbon, now ventured once more to face his antagonist, who on his part did not at all decline the combat. A third battle ensued on the 10th of September 1759, when the French, notwithstanding their superiority both in number of ships and weight of metal, were obliged to retreat with considerable loss ; having 1500 men killed and wounded, while those on board the English fleet did not exceed 569. By the 17th of October the English fleet was completely refitted ; and Admiral Pocock having been joined by a reinforcement of four men of war, soon after returned to England.

All this time the unfortunate General Lally had been employed in unsuccessful endeavours to retrieve the affairs of his countrymen : still, however, he attempted to act on the offensive ; but his fate was at last decided by laying siege to Wandewash, which had lately been taken by Colonel Coote. The advantage in numbers was entirely in favour of the French general ; the English army consisting only of 1700 Europeans including artillery and cavalry, while the French amounted to 2200 Europeans. The auxiliaries on the English side were 3000 black troops, while those of the French amounted to 10,000 black troops and 300 Caffres ; nor was the odds less in proportion in the artillery, the English bringing into the field only 14 pieces of cannon and one howitzer, while the French had 25 pieces in the field and five on their batteries against the fort. The battle began about eleven o'clock on the 22d of January 1760, and in three hours the whole French army gave way and fled towards their camp ; but quitted it on finding themselves pursued by the English, who took all their cannon except three small pieces. They collected themselves under the walls of Chelaput, about 18 miles from the field of battle, and soon after retired to Pondicherry. Colonel Coote caused the country to be walled to the very gates of this fortress by way of retaliation for what the French had done in the neighbourhood of Madras. He then set about the siege of Chel-

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French de-
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sea by ad-
miral Po-
cock.

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They are
defeated a
second
time.

84
Take fort
St David.

85
French de-
feated a
third time
by admiral
Pocock.

86
General
Lally de-
feated at
Wandewash.

India.

India.

Chelaput, which surrendered in one day: a considerable detachment of the enemy was intercepted by Captain Smith; the Fort of Timmery was reduced by Major Monson, and the city of Arcot by Captain Wood. This last conquest enabled the English to restore the nabob to his dominions, of which he had been deprived by the French; and it greatly weakened both the French force and interest in India. M. Lally, in the mean time, had recalled his forces from Seringham, by which means he augmented his army with 500 Europeans. All these were now shut up in Pondicherry, which was become the last hope of the French in India. To complete their misfortunes, Admiral Cornish arrived at Madras with six men of war; and as the French had now no fleet in these parts, the admiral readily engaged to co-operate with the land forces. The consequence was the reduction of Carical, Chellambrum, and Verdachellum, by a strong detachment under Major Monson; while Colonel Coote reduced Permucoil, Alamperva, and Waldour. Thus he was at last enabled to lay siege to Pondicherry itself. Previous to this, however, it had been blockaded by sea and land, which reduced the place to great straits for want of provisions, and induced a mutinous disposition among the garrison. The batteries were not opened till the beginning of December 1760; and the place capitulated on the 15th of January 1761, by which an end was put to the power of the French in this part of the world.

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All the
French
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Bengal.

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Shameful
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While the English were thus employed in effectually reducing the power of their rivals in every part of India, Meer Jassier, the nabob of Bengal, who had been raised to that dignity by the ruin of Surajah Dowla, found himself in a very disagreeable situation. The treasure of the late nabob had been valued at no less than 64 crore of rupees, about 80 millions sterling; and in expectation of such a vast sum, Meer Jassier had no doubt thoughtlessly submitted to the enormous exactions of the English, already mentioned. On his accession to the government, however, the treasure of which he became master fell so much short of expectation, that he could by no means fulfil his engagements to them and supply the expenses of government at the same time. This soon reduced him to the necessity of mortgaging his revenues to supply present demands; and by this ruinous expedient he put it out of his own power ever to extricate himself. In this dilemma his grandees became factious and discontented, his army mutinous for want of pay, and he rendered himself odious to his subjects by the exactions he was necessitated to lay upon them. The English, who for their own interest had raised him to the supreme power, no sooner found that he was incapable of answering their purpose any longer, than they began to scheme against him: and in order to have some colour of reason for pulling down the man whom they had just set up, they either invented or gave ear to the most malicious calumnies against him. The charges brought against him were shortly these: 1. That soon after his advancement he had resolved to reduce that power which raised him to the dignity. 2. That, to effect this, he assassinated or banished every person of importance whom he suspected of being in the English interest. 3. That he negotiated with the Dutch to introduce an armament for the expulsion of the English. 4. That

he had in different instances been guilty of the deepest deceit and treachery towards the English, his best benefactors and allies. 5. That at three different periods the English commander in chief had been basely deserted both by the nabob and his son, when he and the troops were hazarding their lives for them. 6. That he meditated a secret and separate treaty with Shah-Zaddah, the Mogul's son, and had intended to betray the English to him. 7. That the whole term of his government had been one uninterrupted chain of cruelty, tyranny, and oppression. 8. That he meditated, and was near carrying into execution, an infamous secret treaty with the Mahrattas, which would have proved the total destruction of the country if it had taken place. 9. That he threw every possible obstruction in the way of the collection of the English *tunkas* or assignments upon lands. 10. That he encouraged the obstructions given to the free currency of the English siccas; by which the company suffered heavy losses. 11. That by his cruelties he had rendered it scandalous for the English to support his government any longer; and, 12. That by his misconduct, he had brought the affairs of the company as well as his own into the utmost danger of ruin.

In what manner these charges were supported it is difficult to know, nor perhaps were the accusers very solicitous about the strength of their evidence. This seems the more probable, as the accusations of cruelty were, in some instances at least, void of foundation. On the 13th of June 1760, Mr Holwel wrote from Calcutta to Mr Warren Hastings, that by express he had received intelligence of the murder of the princesses of Aliverdy Khan and Shah Amet, in a most inhuman manner, by Meer Jassier's orders. He was said to have sent a Jemmatdaar with 100 horse to Jesseraut Khan to carry this bloody scheme into execution; with separate orders to the Jemmatdaar to put an end to their lives. He refused acting any part in the tragedy, and left it to the other; who carried them out by night in a boat, tied weights to their legs, and threw them overboard. They struggled for some time, and held by the gunwale of the boat; but by strokes on their heads, and cutting off their hands, they were at last forced off and drowned. In like manner we were told that many others of Surajah Dowla's relations had perished; yet when it was thought proper to replace Meer Jassier in 1761, all these dead persons were found *alive* excepting two. It must also be remembered, in behalf of the unfortunate nabob, that besides the sums exacted of him by the English at his accession, he had ceded to them a large extent of territory, and granted them so many immunities in trade, that he had in a manner deprived himself of all his resources; and it was impossible for him to defray the necessary expenses without either extorting money from his subjects, or infringing the privileges he had so inconsiderately granted.

There were two accounts of this remarkable revolution published, materially differing from one another. The first was given in a memorial drawn up at a consultation at Fort William, November 10. 1760, where were present Henry Vanitart, Esq; president; William Ellis, B. Sumner, William McGuire, Henry Verest, and Henry Smyth, Esqs. "We resolved (says the governor) to give the nabob the next day (Octo-
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ber 19. 1760) to reflect upon the letters I had delivered him, proposing some measures for regulating these abuses. I heard nothing from him all that day; but found by my intelligence that he had been in council at his old advisers, whose advice, I was sure, would be contrary to the welfare of the country and of the company. I therefore determined to act immediately on the nabob's fear. There could not be a better opportunity than the night of the 19th offered, it being the conclusion of the Gentoo feast, when all the principal people of that cast would be pretty well fatigued with their ceremonies. Accordingly I agreed with Colonel Caillaud, that he should cross the river with the detachment between three and four in the morning; and having joined Cossim Ali Khan and his people, march to the nabob's palace, and surround it just at day-break. Being extremely desirous to prevent disturbance or bloodshed, I wrote a letter to the nabob, telling him, I had been waiting all the day in expectation that he would have settled the urgent affairs upon which I conferred with him yesterday; but his having favoured me with no answer, plainly showed that all I could represent to him for the good of his country would have no effect, as long as his evil counsellors were about his person, who would in the end deprive him of his government and ruin the company's affairs. For this reason I had sent Colonel Caillaud with forces to wait upon him, and to expel those bad counsellors, and place his affairs in a proper state, and I would shortly follow. This letter I gave to the colonel, to send to the nabob at such a time as he should think most expedient. Measures were taken at the same time for seizing his three unworthy ministers, and to place Cossim Ali Khan in the full management of all the affairs, in quality of deputy and successor to the nabob.

"The necessary preparations being made with all care and secrecy possible, the colonel embarked with the troops, joined Cossim Ali Khan without the least alarm, and marched into the court-yard of the palace just at the proper instant. The gates of the inner court being shut, the colonel formed his men without, and sent the letter to the nabob, who was at first in a great rage, and long threatened that he would make what resistance he could and take his fate. The colonel forbore all hostilities, and several messages passed between him and the nabob. The affair remained in this doubtful state for two hours, when the nabob, finding his persisting was to no purpose, sent a message to Cossim Ali Khan, informing him that he was ready to send the seals and all the ensigns of dignity, provided he would agree to take the whole charge of the government upon him, to discharge all arrears due to the troops, to pay the usual revenue to the king, to save his life and honour, and to give him an allowance sufficient for his maintenance. All these conditions being agreed to, Cossim Ali was proclaimed; and the old nabob came out to the colonel, declaring that he depended on him for his life. The troops then took possession of all the gates; and the old nabob was told, that not only his person was safe, but his government too if he pleased, of which it was never intended to deprive him. He answered, that he had now no more business in the city, where he should be in con-

tinual danger from Cossim Ali Khan; and if he was permitted to go and live at Calcutta, he should be contented. Cossim Ali Khan was now placed on the musnud, and the people in general seemed much pleased with the revolution. The old nabob did not think himself safe even for one night in the city. Cossim Ali Khan supplied him with boats, and permitted him to take away about 60 of his family, with a reasonable quantity of jewels. He begged that he might sleep in his boat that night; which he according did, and on the morning of the 22d of October he set out for Calcutta, and arrived there on the 29th. He was met by a deputation from the council, and treated with every mark of respect due to his former dignity."

The second account of this affair was not published till the 11th of March 1762, and was signed Eyre Coote, P. Amyatt, John Cavnac, W. Ellis, S. Batson, H. Verelst. "In September 1760 (say they), when there was not the least appearance of a rupture or disgust between us and the nabob, but friendship and harmony subsisting, Meer Cossim Khan his son-in-law came down to Calcutta, and having staid a short time returned to Moorshabad. A few days after, Mr Vansittart went up to that city on the pretence of a visit to the nabob Meer Jaffier. Colonel Caillaud, with 200 Europeans and some sepoys, attended him; who, it was pretended, were going to join the army at Patna. When Mr Vansittart arrived at Moradbaug, the nabob paid him two visits; at the last of which Mr Vansittart gave him three letters, proposing the reformation of the abuses in his government, insisted on his naming some person among his relations to take charge of the subahship, and particularly recommended Cossim Ali Khan, who was sent for, and the nabob desired to stay till he came: But the nabob, being greatly fatigued, was suffered to depart to his palace. The night and following day passed in concerting measures with Cossim Ali how to put in execution the plan before agreed on in Calcutta, where a treaty was signed for this purpose. In consequence of these deliberations, our troops crossed the river next night, and being joined by Cossim and his party, surrounded the nabob's palace. A letter from Mr Vansittart was sent in to the nabob, demanding his compliance with what had been proposed to him. To this the nabob returned for answer, 'that he never expected such usage from the English; that while a force was at his gates, he would enter into no terms.' A message was sent in, that if he did not directly comply, they should be obliged to storm the palace. Astonished and terrified at this menace, he opened the gates, exclaiming, that 'he was betrayed; that the English were guilty of perjury and breach of faith; that he perceived their designs against his government; that he had friends enough to hazard at least one battle in his defence: but although no oaths were sacred enough to bind the English, yet as he had sworn to be their faithful friend, he would never swerve from his engagement, and rather suffer death than draw his sword against them.' So suspicious was he of being sold, that he desired to know what sum of money Cossim Ali Khan was to give for the subahship, and he would give half as much more to be continued. He hoped, however, if they in-

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intended to dethrone him, that they would not leave him to the mercy of his son-in-law, from whom he feared the worst; but wished they would carry him from the city, and give him a place of safety in Calcutta. "This last request of the nabob was construed in the light of a voluntary resignation. Our troops took possession of the palace; Meer Cossim was raised to the musnud; and the old nabob hurried into a boat with a few of his domestics and necessaries, and sent away to Calcutta in a manner wholly unworthy of the high rank he so lately held, as was also the scanty subsistence allowed him for his maintenance at Calcutta by his son-in-law. Thus was Jaffier Ali Khan deposed, in breach of a treaty founded on the most solemn oaths, and in violation of the national faith."

According to this account, the servants of the Company, who were the projectors of the revolution, made no secret that there was a present promised them of 20 lacks of rupees from Cossim, who was desirous of making the first act of his power the assassination of Jaffier, and was very much displeased when he found that the English intended giving him protection at Calcutta.

It could scarce be supposed that Meer Cossim, raised to the nabobish in the manner we have related, could be more faithful to the English than Meer Jaffier had been. Nothing advantageous to the interests of the company could indeed be reasonably expected from such a revolution. No successor of Meer Jaffier could be more entirely in subjection than the late nabob, from his natural imbecility, had been. This last consideration had induced many of the council at first to oppose the revolution; and indeed the only plausible pretence for it was, that the administration of Meer Jaffier was so very weak, that, unless he was aided and even controuled by some persons of ability, he himself must soon be ruined, and very probably the interests of the company along with him. Meer Cossim, however, was a man of a very different disposition from his father-in-law. As he knew that he had not been served by the English out of friendship, so he did not think of making any return of gratitude; but instead of this, considered only how he could most easily get rid of such troublesome allies. For a while, however, it was necessary for him to dissemble, and to take all the advantage he could of the power of his allies whilst it could be serviceable to him. By their assistance he cleared his dominions of invaders, and strengthened his frontiers against them; he reduced, by means of the same assistance, the rajahs or independent Indian chiefs who had rebelled in the time of his predecessor, obliging them to pay the usual tribute; by which means he repaired his finances, and thereby secured the discipline and fidelity of his troops. Having thus, by the assistance of the English forces, brought his government into subjection, he took the most effectual means of securing himself against their power. As the vicinity of his capital, Muxadabad, to Calcutta, gave the English factory there an opportunity of inspecting his actions, and interrupting his designs when they thought proper, he took up his residence at Mongheer, a place 200 miles farther up the Ganges, which he fortified in the best and most expeditious manner he could. Being very sensible of the advantages of the European discipline, he resolved

91
Meer Cossim schemes against the English.

to form his army on a new model. For this purpose he collected all the Armenian, Persian, Tartar, and other soldiers of fortune, whose military characters he supposed might serve to raise the spirits of his Indian forces, and abate their natural timidity. He also carefully collected every wandering European who had borne arms, all the Sepoys who had been dismissed from the English service, distributing them among his troops, in order to teach them the English exercise. He changed the fashion of the Indian muskets from matchlocks to firelocks; and as their cannon were almost as deficient as their small arms, he procured a pattern of one from the English, by which he soon formed a train of artillery: and having thus done every thing in his power to enable himself to withstand the English by force of arms, he resolved also to free his court from their emissaries, by imprisoning or putting to death every person of any consequence in his dominions who had shown any attachment to their interest.

His next step was to free himself from some of those restraints which his predecessor Meer Jaffier, and even he himself, had been obliged to lay upon the trade of the country, in order to gratify the avarice of his European allies. At his accession indeed he had ceded to the company a tract of land worth no less than 700,000 l. annually, besides 70,000 l. a-year on other accounts. All this, however, was not sufficient; the immunities granted them in trade were of still worse consequence than even those vast concessions. He knew by experience the distress which these immunities had brought upon his predecessor, and therefore determined to put an end to them. In pursuance of this resolution, he began, in the year 1762, every where to subject the English traders to the payment of certain duties throughout his dominions, and required that their disputes, if beyond the limits of their own jurisdiction, should be decided by his magistrates. This gave such an alarm at Calcutta, that, in November 1762, the governor Mr Vansittart waited on him in person at Mongheer, in order to expostulate with him upon the subject. The nabob answered his remonstrances in the following manner. "If (said he) the servants of the English company were permitted to trade in all parts, and in all commodities, custom free, as many of them now pretend, they must of course draw all the trade into their own hands, and my customs would be of so little value, that it would be much more for my interest to lay trade entirely open, and collect no customs from any person whatever upon any kind of merchandize. This would draw a number of merchants into the country, and increase my revenues by encouraging the cultivation and manufacture of a large quantity of goods for sale, at the same time that it would effectually cut off the principal subject of disputes which had disturbed the good understanding between us, an object which I have more than any other at heart."

By these intimations Mr Vansittart was very much disconcerted; nor indeed was it in any person's power to devise a plausible answer. What the nabob had threatened was evidently in his power; and though he had laid the trade entirely open, no reasonable fault could have been found with him. The proceeding, however, tended evidently to destroy the private trade

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92:
He lays duties on the English traders.

carried

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93
A new agreement concluded with Mr Vansittart, and disowned by the council.

94
The city of Patna taken by the English, but immediately after retaken.

95
Massacre of the English deputies.

carried on by the gentlemen of the factory; and even to prejudice, as they said, that of the company itself. Mr Vansittart therefore thought proper to submit to certain regulations, by which the trade of the English was put under certain restrictions.

This new agreement being instantly put in execution on the part of the nabob, excited the utmost indignation at Calcutta. On the 17th of January 1763, the council passed a resolution, disavowing the treaty made by the governor, and affirmed that he assumed a right to which he was by no means authorized; that the regulations proposed were dishonourable to them as Englishmen, and tended to the ruin of all public and private trade; and that the president's issuing out regulations independent of the council was an absolute breach of their privileges. They sent orders therefore to all the factories, that no part of the agreement between the governor and nabob should be submitted to. Application was again made to Meer Cossim to persuade him to a third agreement; but before the success of this negotiation could be known, hostilities commenced on the part of the English.

There was at that time in the city of Patna (situated on the Ganges, about 300 miles above Calcutta), a fortified factory belonging to the East India company, where were a few European and Indian soldiers. By this factory the city was suddenly attacked on the 25th of June 1763, and instantly taken, though it was defended by a strong garrison, and the fortifications had been newly repaired. The governor and garrison fled out into the country on the first appearance of danger: but perceiving that the victors took no care to prevent a surprise, he suddenly returned with a reinforcement from the country, retook the city, and either cut in pieces or drove into their fort all the English who were in it, after having been only four hours in possession of the place. The English, disheartened by this disaster, did not now think themselves able to defend their fort against the Indians; for which reason they left it, with a design to retreat into the territories of a neighbouring nabob; but being pursued by a superior force, they were all either killed or taken.

This piece of perfidy, for such it certainly was, the nabob repaid by another, viz. slaughtering the deputies who had been sent him by the council of Calcutta to treat about a new agreement with regard to commercial affairs. They set out from Mongheer on the 24th of June, having been unable to bring Meer Cossim to any terms; and though he furnished them with the usual passports, yet, as they were passing the city of Muxadabad, they found themselves attacked by a number of troops assembled for that purpose on both sides of the river, whose fire killed several gentlemen in the boats. Mr Amyatt, the chief of the embassy, landed with a few sepoy, whom he forbid to fire, and endeavoured to make the enemy's troops understand that he was furnished with the nabob's passports, and had no design of committing any hostilities; but the enemy's horse advancing, some of the sepoy fired notwithstanding Mr Amyatt's orders to the contrary. On this a general confusion ensued, and Mr Amyatt, with most of the small party who attended him, were cut in pieces.

These acts of treacherous hostility were soon followed.
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ed by a formal declaration of war. Meer Jaffier, notwithstanding the crimes formerly alleged against him, was proclaimed nabob of Bengal, and the army immediately took the field under the command of Major Adams. The whole force, however, at first consisted only of one regiment of the king's troops, a few of the company's, two troops of European cavalry, ten companies of sepoy, and 12 pieces of cannon. These very soon came to action with the enemy; and having got the better in two skirmishes, cleared the country of them as far as Cassimbuzar river, a branch of the Ganges, which lay between Calcutta and Muxadabad, or Murshudabad, the capital of the province.

The war was now carried on with uninterrupted success on the part of the English; nor does it appear that all the pains taken by Meer Cossim to discipline his troops had made them in the least more able to cope with the Europeans. The English were suffered to pass the river without opposition; but an army of 10,000 Indians were advantageously posted between the river and the city. These were entirely defeated, and Major Adams pushed on directly for the capital. In his way he found the Indians again strongly posted with intrenchments 15 feet high, and defended by a numerous artillery. This strong post was taken by stratagem; a feint being made with a small body of troops against that part where the enemy had collected their greatest strength. Thus the attention of the enemy was drawn entirely to that place, without regarding others where no attack was apprehended. The greatest part of the English army, however, had in the night-time marched round the Indian fortification, and by day break made a furious assault on a place where there was only a slight guard. These instantly fled; the intrenchments were abandoned; and the city, which was protected only by them, fell of course into the hands of the conquerors.

This success of the English served only to make them redouble their diligence. They now penetrated into the heart of the province, crossed the numerous branches of the Ganges, and traversed morasses and forests in quest of their enemy. Meer Cossim, on the other hand, was not wanting in his defence; but the utmost efforts he could use were totally insufficient to stop the career of an enemy so powerful and now flushed with victory. The two armies met on the banks of a river called *Nu-nas Nullas*, on the 2d of August 1763. The Indians had chosen their post with great judgment, and had much more the appearance of an European army than ever was observed before, not only in their arms and accoutrements, but in their division into brigades, and even in their clothing. The battle was much more obstinate than usual, being continued for four hours; but though the Indian army consisted of no fewer than 20,000 horse and 8000 foot, the English proved in the end victorious, and the enemy were obliged to quit the field with the loss of all their cannon.

From this time the Indians did not attempt any regular engagement with the English. They made a stand indeed at a place called *Auda Nulla*, which they had fortified in such a manner that it seemed proof against any sudden attack. But here also they suffered themselves to be deceived in a manner similar to that above-mentioned, and the place was taken with great slaughter.

^{In the} ter. They now abandoned a vast tract of country; and tho' there were several very defensible posts one behind another, so much were they disheartened by this misfortune, that they never attempted to stop the progress of the English, but laid open the whole country to the very gates of Mongheer.

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Mongheer taken.

¹⁰¹
Inhuman murder of the English prisoners at Patna.

The next operation was the siege of Mongheer itself; which, notwithstanding all the pains Meer Cossim had been at to fortify it, held out no more than nine days after the trenches were opened: so that nothing now remained to complete the conquest of Bengal but the reduction of the city of Patna. The unfortunate Meer Cossim, in the mean time, enraged at the irresistible progress of the English, vented his rage on the unhappy prisoners taken at Patna; all of whom, to the number of about 200, he caused to be inhumanly murdered. This villany was perpetrated by one Somers, a German, who had originally been in the French service, but deserted from them to the English East India company, and from the company to Meer Cossim. This assassin, by the Indians called *Soomeroo*, having invited the English gentlemen to sup with him, took the opportunity of borrowing their knives and forks, on pretence of entertaining them after the English manner. At night, when he arrived, he stood at some distance in the cook-room to give his orders; and as soon as the two first gentlemen, Mr Ellis and Lushington, entered, the former was seized by the hair, his head pulled backward, and his throat cut by another. On this Mr Lushington knocked down the murderer with his fist, seized his sword, wounded one and killed two before he himself was cut down. The other gentlemen being now alarmed, defended themselves, and even repulsed the sepoys with plates and bottles. Somers then ordered them on the top of the house to fire down on the prisoners; which they obeyed with reluctance, alleging that they could not think of murdering them in that manner, but if he would give the prisoners arms, they would fight them; on which he knocked several of them down with bamboes. The consequence was, that all the gentlemen were either shot or had their throats cut. Dr Fullarton was the only person who escaped, having received a pardon from the tyrant a few days before the massacre.

¹⁰²
Patna taken, and Bengal entirely reduced by the English.

This inhumanity was far from being of any service to the cause of Meer Cossim. Major Adams marched without delay from Mongheer to Patna; and as the place was but indifferently fortified, it could make but a feeble resistance. The cannon of the English soon made a practicable breach, and in no longer time than eight days this great city was taken by storm. Thus the nabob was deprived of all his fortified places, his army reduced to a small body, and himself obliged to fly to Sujah Dowla nabob of Oude, who acted as grand vizier to the Mogul. Here he was kindly received, and an asylum promised for his person, but admittance was refused to his army, nor would this prince consent at any rate to make his country a seat of war. The English were now entire masters of Bengal; for though Meer Jassier was proclaimed nabob, it is not to be supposed that he had now any authority farther than what they pleased to give him. Major Adams did not long survive the conquest of Patna, which was taken on the 6th of November 1763; he died in the month of March 1764.

Meer Cossim being thus driven out, an agent was sent

from Calcutta to Sujah Dowla, proposing an alliance with him and the Mogul, who was along with him, and offering to assist them against Meer Cossim or any other enemy who should attempt an invasion of their dominions; in return for which, it was expected that they should declare themselves open enemies to Meer Cossim, and use their utmost endeavours to seize and deliver him up with all his effects. This design was communicated to Major Adams on the 8th of December 1763; but as he was next day to resign the command of the army, Major Carnac was desired to take the command upon him, and to watch the motions of Meer Cossim, as well as to guard the dominions of Meer Jassier against any hostilities which might be attempted. It was also resolved, that in case Meer Cossim should prevail upon the Mogul and Sujah Dowla to assist him, Major Carnac was desired to advance to the banks of the river Carumnassa, and there oppose the entrance of any hostile army.

It soon appeared that the friendship of the English was not what Sujah Dowla desired. He considered them as rapacious usurpers, who having got a footing in the country under pretence of commerce, could be satisfied with nothing less than the entire possession of it, to the ruin of the natural inhabitants. In the beginning of February 1764, therefore, it was known that Sujah Dowla had determined to assist Meer Cossim in attempting to recover Bengal. The president and council on this wrote him, that though they heard such a report, they could not believe it, considering the former connections subsisting between him and the chiefs of the company, and were persuaded he would not act in such an unjust manner: but if it really was his intention to espouse the cause of Meer Cossim, they informed him that they were resolved to keep Bengal free from troubles, and carry the war into the dominions of Sujah Dowla himself. To this the nabob replied by enumerating the many favours conferred on the English by the Mogul. "Notwithstanding these (says he) you have interfered in the king's country, possessed yourselves of districts belonging to the government, and turned out and established nabobs at pleasure, without the consent of the imperial court. Since you have imprisoned dependants on the court, and exposed the government of the king of kings to contempt and dishonour; since you have ruined the trade of the merchants of the country, granted protection to the king's servants, injured the revenues of the imperial court, and crushed the inhabitants by your acts of violence; and since you are continually sending fresh people from Calcutta, and invading different parts of the royal dominions; to what can all those wrong proceedings be attributed, but to an absolute disregard to the court, and a wicked design of seizing the country to yourselves? If these disturbances have arisen from your own improper desires, desist from such behaviour in future; interfere not in the affairs of government; withdraw your people from every part, and send them to their own country; carry on the company's trade as formerly, and confine yourselves to commercial affairs," &c. Another letter, much to the same purpose, was sent to Major Carnac; but the president and council of Calcutta, instead of paying any regard to the remonstrances of the nabob, determined to commence an immediate and offensive war against him.

Notwithstanding this resolution, several difficulties

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occurred

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¹⁰³
Alliance proposed with Sujah Dowla.

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Proposed alliance rejected by Sujah Dowla.

105
Sir Hector
Munro suc-
ceeds Ma-
jor Adams

106
Defeats the
Indians at
Buxard.

107
Is repulsed
at Chanda
Geer.

occurred in carrying on a war at this time. The principal were the death of Major Adams, whose name had become formidable to the Indians, and the mutinous disposition of the army. The former was obviated by the appointment of Colonel Hector Munro, who, in military skill, appeared nothing inferior to his predecessor; and the mutinous disposition of the soldiery was got the better of by a most severe example of the mutineers, 24 of whom were blown away from the mouths of cannon. Hostilities were commenced on the part of Meer Cossim, who cut off a small party of English troops, and sent their heads to the mogul and Sujah Dowlah. An army of 50,000 men was collected, with a most formidable train of artillery, such as might be supposed to follow an European army of equal numbers. This prodigious armament seems to have effaced all the caution of Meer Cossim; for though he had formerly experienced the bad effects of engaging the English in a pitched battle, yet he now thought proper to try his fortune a second time in the same way. The two armies met on the 22d of October 1764, at a place called Buxard, on the river Carumnassa, about 100 miles above the city of Patna. The event was similar to that of other engagements with the English, to whom it never was possible for any advantages either in situation or number to make the Indians equal. The allied army was defeated with the loss of 6000 killed on the spot, 130 pieces of cannon, a proportionable quantity of military stores, and all their tents ready pitched; while, on the side of the conquerors, only 32 Europeans and 239 Indians were killed, and 57 Europeans and 473 Indians wounded.

The only place of strength now belonging to the allies on this side the river was a fort named Chanda Geer. The reduction of this place, however, might well have been deemed impracticable, as it stood on the top of a high hill, or rather rock, situated on the very brink of the Ganges, by which it could be constantly supplied with provisions; and as to military stores, it could not stand in need of any as long as stones could be found to pour down on the assailants. Notwithstanding all those difficulties, however, Colonel Munro caused his soldiers advance to the attack; but they were received with such volleys of stones, which the Indians threw both with hands and feet, that they were repulsed in a very short time; and though the attack was renewed the next day, it was attended with no better success; on which the English commander encamped with his army under the walls of Benares.

Soon after this, Colonel Munro being recalled, the command of the army devolved on Sir Robert Fletcher, a major in the company's troops. The nabob in the mean time, instead of attacking the English army at once, contented himself with sending out parties of light horse to skirmish with their advanced posts, while the main body lay at the distance of about 15 miles from Benares, which rendered it very dangerous for them to move from their place. On the 14th of January 1765, however, Sir Robert ventured at midnight to break up his camp under the walls of Benares, and to march off towards the enemy, leaving a party to protect that place against any attempt during his absence. In three days he came up with the main body of Indians, who retreated before him; on which he resolved to make another attempt on Chanda Geer,

before which the late commander had been foiled. His success would in all probability have been no better than that of his predecessor, had not the garrison mutinied for want of pay, and obliged the commander to surrender the place.

The reduction of Chanda Geer was followed by that of Eliabad, the capital of the enemy's country, a large city on the Ganges, between 60 and 70 miles above Chanda Geer, defended by thick and high walls and a strong fort; soon after which Sir Robert was superseded in the command of the army by Major Carnac. Sujah Dowla in the mean time had been abandoned by the Mogul, who concluded a treaty with the English soon after the battle of Buxard. He did not, however, give himself up to despair, but gathered together, with great assiduity, the remains of his routed armies; and seeing that his own territories could not supply him with the requisite number of troops, he now applied to the Maharrattas for assistance. But these people, though very formidable to the other nations of Indostan, were far from being able to cope with the English. On the 20th of May 1765, General Carnac having assembled his troops, marched immediately to attack them; and having gained a complete victory at a place called Calpi, obliged them to retreat with precipitation across the Yumna into their own country.

Sujah Dowla, now destitute of every resource, determined to throw himself on the clemency of the English. Previous to this, however, he allowed Meer Cossim and the assassin Somers to escape; nor could any consideration ever prevail upon him to deliver them up. Three days after the battle of Calpi, the nabob surrendered himself to General Carnac, without stipulating any thing in his own favour, farther than that he should await the determination of Lord Clive concerning him.

In the beginning of February this year died Meer Jaffier Ali Cawn, nominal nabob of Bengal. The succession was disputed betwixt his eldest surviving son Najem il Doula, a youth of about 18 years of age, and a grandson by his eldest son Miran, at that time only seven years old. As the English were in reality absolute sovereigns of the country, it was debated in the council of Calcutta whether Meer Jaffier's son should be allowed to succeed, according to the custom of the country, or the grandson, according to the English custom. The point being carried in favour of Najem, it was next debated on what terms he should be admitted to the succession. The late nabob, among other impositions, had obliged himself to support an army of 12,000 horse and as many foot. It was alleged on this occasion, that he had not fulfilled his engagement; that he had disbanded most of the troops; that at best they were but an useless burden, having never answered any purpose in real service, for which reason the company had been obliged to augment their military establishment: it was therefore now judged expedient that the nabob should settle a sum, upwards of 800,000 l. annually, on the company, to be paid out of the treasury; that he should also discard his prime minister and great favourite Nuncomar, and receive in his place a person appointed by the council, who was to act in the double capacity of minister and governor to assist and instruct him. The

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Chanda
Geer taken
by Sir Ro-
bert Flet-
cher.

109
Sujah Dow-
la assisted by
the Mah-
arrattas.

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Who are
defeated,
and Sujah
Dowla
submit.

111
Young na-
bob of Ben-
gal hardly
used by the
English.

^{108a} The council were also to have a negative upon the nomination of all the superintendants and principal officers employed in collecting or receiving of the revenues; that he should take their advice, and have their consent to such nominations whenever they thought proper to interfere in them. He was also to receive their complaints, and pay a due attention to them upon the misbehaviour of any of the officers who either were appointed already or should be in time to come.

With these extravagant requisitions the young nabob was obliged to comply, though he had discernment enough to perceive that he was now an absolute slave to the council of Calcutta. Though obliged by treaty to dismiss Nuncomar from the office of prime minister, he still continued to show him the same favour, until at last he was charged with carrying on a treasonable correspondence with Sujah Dowla, for which the nabob was enjoined to send him to Calcutta to take his trial. The unfortunate prince used every method to deliver his favourite from the impending danger, but to no purpose: he was obliged to submit to the mortification of having all his offers with regard to his release rejected, though the committee at Calcutta afterwards thought proper to set him at liberty without any trial.

These extraordinary powers, exerted in such a despotical manner by the council of Calcutta for such a length of time, could not but at last induce their superiors to circumscribe them in some degree, by appointing others who should act independently even of this council, and who might be supposed to be actuated by more upright and honourable principles than had hitherto appeared in their conduct. The great character which Lord Clive had already gained in the east, justly marked him out as a proper person for adjusting the affairs of Bengal. On the 3d of May 1765 he arrived in the east, with full powers as commander in chief, president, and governor of Bengal. An unlimited power was also committed to a select committee, consisting of his lordship and four gentlemen, to act and determine every thing themselves, without dependence on the council. It was, however, recommended in their instructions, to consult the council in general as often as it could be done conveniently; but the sole power of determining in all cases was left with them, until the troubles of Bengal should be entirely ended. By these gentlemen a plan of reformation was instantly set about; by which, however, violent disputes were occasioned: but the committee, disregarding these impotent efforts, exerted their authority to the full extent, seldom even acquainting the council with their transactions, and never allowing them to give their opinion on any occasion.

¹¹³ On taking the affairs of Bengal into thorough consideration, Lord Clive found that the success of the British arms could be productive of nothing but wars; that to ruin Sujah Dowla was to break down the strongest barrier which the Bengal provinces could have against the incursions of the Mahrattas and other barbarous people to the westward, who had long desolated the northern provinces; and the Mogul, with whom the company had concluded a treaty, was utterly unable to support himself, and would require the whole English power in the east to secure him in his dignity. His lordship therefore found it necessary to conclude a

treaty with Sujah Dowla. The Mogul was satisfied by obtaining a more ample revenue than he had for some time enjoyed; by which means he might be enabled to march an army to Delhi to take possession of his empire. For the company his lordship obtained the office of duan or collector of revenues for the province of Bengal and its dependencies. Thus Sujah Dowla was again put in possession of his dominions, excepting a small territory which was reserved to the Mogul, and estimated at 20 lacks of rupees, or 250,000 l. annually. The company were to pay 26 lacks of rupees, amounting to 325,000 l. sterling. They engaged also to pay to the nabob of Bengal an annual sum of 53 lacks, or 662,500 l. for the expences of government, and the support of his dignity. The remainder of the revenues of Bengal were allotted to the company, who on their part guaranteed the territories at that time in possession of Sujah Dowla and the Mogul.

Thus the East India company acquired the sovereignty of a territory equal in extent to the most flourishing kingdom in Europe. By all this, however, they were so far from being enriched, that the disorder of their affairs attracted the attention of government, and gave the British ministry an opportunity at last of depriving them of their territorial possessions, and subjecting the province of Bengal to the authority of the crown*. New misfortunes also speedily occurred, and the company found a most formidable enemy in Hyder Aly, or Hyder Naig. This man, from the rank of a common sepoy, had raised himself to be one of the most considerable princes in the empire of Indostan. Being sensible that the power of the English was an insuperable bar to his ambitious designs, he practised on the nizam of the Decan, and partly by promises partly by threats, engaged him to renounce his alliance with the company, and even to enter into a war against them. As he had been at great pains to introduce the European discipline among his troops, and had many renegadoes in his service, he imagined, that with the advantage of numbers he should certainly be able to cope with his antagonists in the open field. In this, however, he was deceived; for on the 26th of September 1767, his army was entirely defeated by colonel Smith at a place called *Error* near Trinomallee; after which the nizam thought it advisable to desert his new ally, and conclude another treaty with the English. From the latter, however, he did not obtain peace but at the expence of ceding to them the Duanny of the Balegat Carnatic, which includes the dominions of Hyder Aly and some petty princes.

Hyder, thus deserted by his ally, transferred the seat of war to a mountainous country, where, during the year 1767, nothing decisive could be effected; while the Indian cavalry was sometimes enabled to cut off the supplies, and interrupt the communications of their antagonists. During these operations some ships were fitted out at Bombay, which conveyed 400 European soldiers and about 800 sepoyes to attack Mangalore, one of Hyder Aly's principal sea-ports, where all his ships lay. This enterprize proved successful, and nine ships were brought away; but too small a garrison having been left in the place, it was almost immediately after retaken, and all who were in it made prisoners by Hyder Aly.

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114
Affairs of
Bengal settled by
Lord Clive;

See East
India Company.

115
War with
Hyder Aly;

116
He is defeated by
Colonel Smith.

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Decline of
the Eng-
lish affairs,
with the
cause of
their bad
success.

In the mean time, an injudicious measure, adopted by the English in their method of managing the army, proved not only of the utmost detriment to their cause, but occasioned disgraces hitherto unheard of in the history of the nation, viz. the desertion of officers from the service of Britain to that of a barbarous prince, and the giving up of forts in such a shameful manner as could not but suggest a suspicion that they had been betrayed.—The original cause of all this mischief was the appointment of *field-deputies* to attend the army, and to control and superintend the conduct of the commander in chief; and these, in the present instance, being deeply concerned in the contracts for the army, took care to regulate its motions in such a manner as best suited their private interest or convenience. Hyder Aly did not fail to improve the errors consequent upon this kind of management to his own advantage. General Smith had penetrated far into his country, taken several of his fortresses, and was in a fair way of becoming master of his capital, when all his operations were checked at once by the field-deputies. His antagonist being thus allowed some respite, suddenly entered the Carnatic with a numerous army of horse, ravaging and destroying every thing at pleasure. Thus the English were obliged to relinquish all their conquests in order to defend their own territories; while this reverse of fortune not only discouraged the allies of the English, but even produced in them an inclination to desert their cause, and go over to Hyder Aly, while those who remained faithful paid dearly for their attachment. The nabob of Arcot, the most faithful ally the English ever had, suffered extremely on this occasion. Hyder Aly had long entertained a violent enmity against this prince; most probably on account of his inviolable attachment to the English. His dominions were therefore ravaged without mercy; and thus, while Hyder gratified his personal resentment against him, he cut off from the English one of the principal resources they had for carrying on the war.

On the return of the company's forces to the defence of the Carnatic, they found themselves very little able to cope with their adversary; for, besides the continuance of the same causes which had formerly contributed to their want of success, they had been very much weakened in their expedition. Hyder Aly had also the prudence to avoid a general engagement, but frequently intercepted the convoys of the English, cut off their detached parties, and wearied them out with long and continual marches. The news of his success against an enemy hitherto invincible by all the powers of India, so raised his reputation, that adventurers flocked to him from all parts; by which means his cavalry were soon increased to upwards of 90,000; to which, however, his infantry bore no proportion.

Notwithstanding all his success, it appears that the forces of Hyder Aly were altogether unable to cope with those of Britain, even when there was the greatest imaginable disparity of numbers. A detachment of the company's forces had made an assault upon a fort called *Mulwaggle*, in which they were repulsed with some loss. This, with the small number of the detachment, encouraged Hyder Aly to march, at the head of a great part of his army, to the protection of the fort. The commanding officer, however, Colonel Wood, did not hesitate, with only 460 Europeans and

2300 sepoy, to attack this army, consisting of 14,000 horse, 12,000 men armed with matchlock guns, and six battalions of sepoy. The engagement lasted six hours; when at last Hyder Aly, notwithstanding his numbers, was obliged to retreat, leaving the field covered with dead bodies; the loss of the British being upwards of 300 killed and wounded. This engagement, however, was attended with no consequences affecting the war in general, which went on for some time in the same manner, and greatly to the disadvantage of the company. The divisions and discontents among the officers and council daily increased, the soldiers deserted, and every thing went to ruin. The revenues of the establishment of Madras being at last unequal to the expences of the war, large remittances were made from Bengal to answer that purpose; and as these were made in a kind of base gold coin, the company is said by that means alone to have lost 40,000l. in the difference of exchange only. At last Hyder Aly having given the English army the slip, suddenly appeared within a few miles of Madras; which occasioned such an alarm, that the presidency there were induced to enter into a negotiation with him. The Indian prince, on his part, was very ready to hearken to proposals of peace upon any reasonable terms. An offensive and defensive treaty was therefore concluded on the 3d of April 1769, on the simple condition that the forts and places taken on both sides should be restored, and each party sit down contented with their own expences.

By this treaty it was particularly stipulated, that in case of either party being attacked by their enemies, the other should give them assistance; and in this case even the number of troops to be supplied by each was specified. It soon after appeared, however, that the presidency of Madras were resolved to pay very little regard to their engagements. Hyder Aly having in a little time been involved in a war with the Mahrattas, applied for assistance, according to agreement; but was refused by the presidency, who pretended to fear a quarrel with the Mahrattas themselves. As the latter are a very powerful and warlike nation, Hyder Aly found himself overmatched, and therefore applied several times to the English for the assistance he had a right to expect; but was constantly refused on various pretences: which convinced him at last that he could place no dependence on the friendship of the English, and filled him with an implacable hatred against them. As soon, therefore, as he could make up his differences with the Mahrattas, he resolved to recover his losses, and revenge himself on those faithless allies. With this view he applied himself to their rivals the French; whom no Indian nation ever found backward in supplying them with the means of defence against the English. By their means he obtained military stores in the greatest abundance, a number of experienced officers and soldiers; and the European discipline was brought to much greater perfection than even he himself had ever been able to bring it before this period. Thus, in a short time, imagining himself a match for the Mahrattas, he renewed the war; and gained such decisive advantages, as quickly obliged them to conclude an advantageous treaty with him.

It now appeared that the English, notwithstanding their pretended ill-will to quarrel with the Mahrattas, had not the least hesitation at doing so when their interest

India.
118
Hyder Aly
defeated by
Colonel
Wood.

119
A treaty
concluded
with him.

120
Broken by
the Eng-
lish.

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War be-
tween the
English and
Mahrattas.
terest

terest was concerned. In order to understand the subsequent transactions, however, we must observe, that the Mahrattas, like other nations of Indostan, were originally governed by princes called *Rajahs*, who reigned at Setterah; and though in process of time they came to be divided into a number of petty states, yet they paid a nominal respect to the ram-rajah, who had a right to assemble the chiefs, and order out their troops on any necessary occasion. By degrees this dignity of ram-rajah or sou-rajah (as he was also called), became merely titular, the administration being entirely possessed by the paishwa or chancellor. This office being usurped by one particular family, Nana-row, the reigning paishwa, seized the ram-rajah, and confined him in a fortress near Setterah. At his death he left two sons Mada-row and Narain-row; of whom the former, as being the elder, succeeded him in the paishwaship. Ionogee Boosla, or Bouncello, the immediate predecessor of Moodagee Boosla, rajah of Berar, was one of the pretenders to the dignity of ram rajah, as being the nearest of kin; at the same time that Roganaut-row, called also Ragobah, uncle to Mada-row himself, pretended to the paishwaship. On this account the latter was confined by Mada-row, but who imprudently released him a little before his death, and even recommended to him in the most affectionate manner the care of his brother Narain-row, who was to succeed to the paishwaship. The care he took in consequence of this recommendation was such as might easily have been imagined; the unhappy Narain-row was murdered, and Roganaut row the assassin fled to Bombay; where, on promising a cession of territory, he was protected and encouraged in his pretensions. The Mahrattas remonstrated against this behaviour; but the English had determined at all events to profit by the civil dissensions of the Indians, and therefore paid no regard to the justice or injustice of their cause. The Mahrattas therefore not only made up their differences with Hyder Aly, as has been already mentioned, but became determined enemies to the English, at the same time that a dangerous confederacy was formed among the most powerful princes of India to expel from that part of the world those intruders whose avarice could be satisfied with no concessions, and whom no treaties could bind when it served their turn to break them.

The resentment of Hyder Aly was particularly directed against the presidency of Madras for the reasons already given; he had also received fresh provocation by their causing a body of troops march through his dominions without his leave, and that to the assistance of a prince for whom he had no great friendship; also by the capture of the French settlement of Mahis, on the coast of Malabar, which he said was within his dominions, and consequently that the French were under his protection. His troops were therefore assembled from every quarter, and the greatest preparations made for a powerful invasion. The presidency of Madras in the mean time spent their time in mutual altercations, neglecting even to secure the passes of the mountains, through which only an invasion could be made, until their active antagonist, having seized and guarded those passes, suddenly poured out thro' them at the head of 100,000 men, among whom was a large body of European troops under French officers, and

commanded by colonel Lally, a man of great bravery and experience in war. India.

The alarm was given on the 24th of July 1780 that Hyder Aly's horse were only nine miles distant from Madras. The inhabitants instantly deserted their houses and fled into the fort; while the unresisted barbarian burnt the villages, reduced the inferior forts, and prepared to lay siege to the capital. It being now absolutely necessary to make some resistance, measures were taken for assembling the troops; in doing which an express was sent to colonel Baillie, at that time at Gumeroponda, about 28 miles from Madras, to proceed from thence directly to Conjeveram with the corps under his command, where the main body was to meet him. But when the latter was under marching orders, the first regiment of cavalry positively refused to move without money; and as they persisted in their resolution, were at last made prisoners and sent to Madras. The main body, then, consisting of 1500 Europeans and 4200 sepoy, under Sir Hector Munro, with their train of artillery, proceeded towards Conjeveram; and such were the fatigues of their march, that 200 men belonging to the 73d regiment were left lying on the road. On their arrival at Conjeveram, they found the town in flames, great bodies of the enemy's cavalry advancing on both flanks, and no appearance of colonel Baillie's detachment. The march of this body had been impeded by a small river swelled by a sudden fall of rain. On this occasion, the officer who gives the account of his disaster makes the following observation. "In this incident we have a most remarkable proof and example of the danger of procrastination, and on what minute circumstances and sudden springs of the mind the fortune and the general issue of war may depend. Had colonel Baillie passed over the Tripaffore without halting, as some advised, and encamped on its southern instead of its northern banks, the disaster that soon followed would have been prevented, and an order of affairs wholly different from that which took place would have succeeded."

Hyder Aly having now raised the siege of Arcot, in which he had been employed, marched towards Conjeveram; in the neighbourhood of which he encamped, and in the course of several days, at different times, offered battle. On the 6th of September he detached his son Tippoo Saib with the flower of his army to cut off the detachment under colonel Baillie, who was now at Perrambaukam, a small village distant from the main body about 15 miles, he himself remaining in the neighbourhood of Conjeveram, in order to watch the motions of Sir Hector Munro.

The detachment under Tippoo Saib consisted of 30,000 horse, 8000 foot, with 12 pieces of cannon. Notwithstanding this superiority in number, however, they were bravely repulsed by Colonel Baillie's handful of troops; and a junction was effected with a detachment under Sir Robert Fletcher, sent by Sir Hector Munro on first hearing the noise of the engagement. He is attacked by Tippoo Saib, but repulses him.

This junction was effected on the 9th of September, and next morning orders were given for the whole army to march; Colonel Fletcher's detachment being dispersed in different parts of the line. From the moment they began to march the enemy played off their rockets, which, however, did but little execution; again attacked.

122
Dreadful
invasion by
Hyder Aly.

123
Unfortu-
nate expe-
dition of
Colonel
Baillie.

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tion; but about ten at night several guns began to open on the rear of the English. Colonel Baillie, therefore, after some proper manœuvres, caused his troops form a line, while the enemy cannonaded them incessantly with great execution. On this Colonel Baillie detached Captain Rumley with five companies of sepoy grenadiers to storm their guns; which service they would have undoubtedly accomplished, had not their march been interrupted by a torrent of water which at that time happened to be unfordable. Captain Rumley therefore returned about half an hour after eleven, when the guns of the enemy were heard drawing off towards the English front, and a general alarm was perceived throughout their camp; owing, as was supposed, to their having received intelligence of the party that had been sent to storm their guns. "From their noise, confusion, and irregular firing (says our author), one would have imagined that a detachment of our men had fallen upon them with fixed bayonets. At that critical moment, had a party of grenadiers been sent against them, they would have routed without difficulty the whole of Tippoo's army. Having about ten o'clock in the evening advanced a few hundred yards into an avenue, the detachment remained there in perfect silence till the morning.

"Colonel Fletcher being asked by some officers, why Colonel Baillie halted? modestly answered, that Colonel Baillie was an officer of established reputation, and that he no doubt had reasons for his conduct. It cannot, however, be concealed, that this halt afforded an opportunity for Tippoo Saib to draw off his cannon to a very strong post by which the English were obliged to pass; and at the same time of informing Hyder of their situation, and suggesting to him the expediency of advancing for the improvement of so favourable a conjuncture.

"On the 10th of September, at five o'clock in the morning, our little army marched off by the right in subdivisions, having their baggage on their right flank and the enemy on their left. A few minutes after six two guns opened on their rear, on which the line halted a few minutes. Large bodies of the enemy's cavalry now appeared on their right flank; and just at the moment when the pagoda of Conjeveram appeared in view, and our men had begun to indulge the hopes of a respite from toils and dangers, a rocket-boy was taken prisoner, who informed them, that Hyder's whole army was marching to the assistance of Tippoo. Four guns now opened on their left with great effect. So hot was the fire they sustained, and so heavy the loss, that Colonel Baillie ordered the whole line to quit the avenue, and present a front to the enemy; and at the same time dispatched Captain Rumley with ten companies of sepoy grenadiers to storm the enemy's guns.

226
% attacked
by Hyder's
whole ar-
my.

"Within a few minutes after Captain Rumley had left the line Tippoo's guns were silenced. Rumley's little detachment immediately took possession of four of the enemy's guns, and completely routed the party attached to them. Captain Rumley, overcome with fatigue, ordered Captain Gowdie, the officer next in command, to lead on the party, and take possession of some more guns placed a few hundred yards in their front. But in a few minutes after, as they were advancing for this purpose, a sudden cry was heard a-

mong the sepoys, of horse! horse! The camp follow-
ers, whose numbers were nearly five to one of the troops under arms, were driven on a part of our line by the numerous and surrounding forces of Hyder Aly; who being informed of the embarrassing situation of Colonel Baillie, had left his camp without striking his tents, with a view to conceal his march from the English. A great confusion among our troops was the unavoidable consequence of this sudden onset. The Europeans were suddenly left on the field of action alone: and at that critical moment a detachment from the advanced guard of Hyder's army pressed on with great celerity between our line and Captain Rumley's party. The commanding officer, therefore, apprehensive of being cut off from our little army, judged it most prudent to retreat.

"Colonel Baillie, when he was informed that an immense body of horse and infantry was marching towards him, and that this was supposed to be Hyder's main army, said, 'Very well, we shall be prepared to receive them.' Hyder's whole forces now appeared incontestably in view; and this barbarian chief, who, as was observed of the Roman general by Pyrrhus, had nothing barbarous in his discipline, after dividing his guns agreeably to a preconcerted plan, opened from 60 to 70 pieces of cannon, with an innumerable quantity of rockets.

"Hyder's numerous cavalry, supported by his regular infantry and European troops, driven on by threats, encouraged by promises, and led on by his most distinguished officers, bore on our little army in different quarters without making the least impression. Our men, both Europeans and sepoys, repeatedly presented and recovered their fire-arms as if they had been manœuvring on a parade. The enemy were repulsed in every attack; numbers of their best cavalry were killed, and many more were wounded; even their infantry were forced to give way: and Hyder would have ordered a retreat, had it not been for the advice of General Lally, who informed him that it was now too late, as General Munro was most probably advancing on their rear from Conjeveram; for which reason nothing remained but to break the detachment by their artillery and cavalry.

"Tippoo Saib had by this time collected his party together, and renewed the cannonade; and at the same time that the English were under the necessity of sustaining an attack both from the father and son, two of their tumbrils were blown up by Hyder's guns, and a large opening made in both lines. They had now no other ammunition than grape; their guns discontinued firing: and in this dreadful situation, under a terrible fire not only of guns but rockets, losing great numbers of officers and men, they remained from half past seven till nine o'clock.

"On this Hyder Aly, perceiving that the guns were quite silenced, came with his whole army round their right flank. The cavalry charged them in distinct columns, and in the intervals between these the infantry poured in volleys of musketry with dreadful effect. Mhiar Saib, with the Mogul and Sanoor cavalry, made the first impression. These were followed by the elephants and the Mysorean cavalry, which completed the overthrow of the detachment. Colonel Baillie, though grievously wounded, rallied the Euro-

India.

127
Gallant be-
haviour of
the Eng-
lish.

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They are
at last de-
feated.

peans, and once more formed them into a square and with this handful of men he gained an eminence, where, without ammunition, and most of the people wounded, he resisted and repulsed 13 separate attacks; but fresh bodies of cavalry continually pouring in, they were broken without giving way. Many of our men, desperately wounded, raising themselves from the ground received the enemy on their bayonets.

"Captain Lucas's battalion of sepoy, at the time when our men moved up to a rising ground, was stationed to the right of the European grenadiers; but that corps, seeing the Europeans in motion, and misunderstanding perhaps this evolution for a retreat, broke in the utmost confusion. The Europeans, bravely sustaining their reputation for intrepid valour, remained in this extremity of distress steady and undaunted, though surrounded by the French troops, and by Hyder's cavalry to the number of 40,000. They even expressed a desire, though their number did not exceed 400, of being led on to the attack. A party of Topasses, who lay at the distance of about 30 yards in our front, kept up an incessant fire of small arms with great effect. Many attempts were made by the ene-

my's cavalry to break this small body of men; but by the steady conduct of both our officers and men they were repulsed.

"Colonel Baillie, finding that there was now no prospect of being relieved by General Munro, held up a flag of truce to one of the chiefs of Hyder's army. But this was treated with contempt, and the sordid endeavoured at the same time to cut off the colonel. The reason the enemy assigned for this was, that the sepoy had fired after the signal was hoisted. A few minutes after this, our men received orders to lay down their arms, with intimation that quarter would be given. This order was scarcely complied with, when the enemy rushed in upon them in the most savage and brutal manner, sparing neither age nor infancy nor any condition of life; and, but for the humane interposition of the French commanders Lally and Pimoran, who implored and insisted with the conqueror to show mercy, the gallant remains of our little army must have fallen a sacrifice to that savage thirst of blood with which the tyrant disgraced his victory." (A)

In this unfortunate action near 700 Europeans were killed

(A) In a narrative of the sufferings of the English who survived this fatal day, said to be published by an officer in Colonel Baillie's detachment, we find it related, that "Hyder Aly, seated in a chair in his tent, enjoyed the sight of the heads of the slain, as well as of his prisoners. Colonel Baillie, who was himself very much wounded, was brought to his camp on a cannon, and with several other gentlemen in the same situation laid at the tyrant's feet on the ground and in the open air. In this situation they saw many of the heads of their countrymen presented to the conqueror, some of them even by English officers, who were forced to perform that horrid task; in a little time, however, Hyder ordered no more heads to be brought to him while the English gentlemen were present. A tent was fitted up for Colonel Baillie and his officers, but without straw or any thing else to lie upon, though many of them were dangerously wounded; and as the tent could only contain 10 persons, the rest were obliged to lie in the open air. When the prisoners were removed from place to place, they were wantonly insulted, and even beaten by those who had the charge of them. If the latter halted to refresh themselves under a tree, they would be at the trouble of carrying their prisoners to the side next the sun, lest they should enjoy the benefit of the shade. Sometimes they were tormented with thirst, at others the people allowed them to drink water out of the palms of their hands, it being reckoned a profanation to allow an European to drink out of a vessel belonging to an Indian," &c.

In this narrative are likewise mentioned some examples of a recovery from wounds, which, if we can depend on their authenticity, must undoubtedly show a restorative power in the human body altogether unknown in this climate.

"Lieutenant Thomas Bowser received a musket ball in his leg, and after that eight desperate wounds with a scymitar. He lay for seven hours on the spot, deprived of all sensation; but, towards evening, awakened from his trance, stripped of all his clothes, except a pair of under drawers and part of his shirt, with an intense thirst, calling out, and imploring a little water from the enemy. Some were moved with compassion, while others answered his intreaties only with insults and threats of immediate death. Some water, however, was brought from a pool in the field of battle, about 50 or 60 yards from the place where he lay. It was deeply tinged with blood; nevertheless, Mr Bowser being furnished by one of Hyder's soldiers with an earthen chatty, or pot containing about a pint, and directed to the place, crawled thither as well as he could. Though struck with horror at the sight of the dead and wounded with which it was filled, he quenched his thirst with the liquid; and having filled his chatty, endeavoured to proceed towards Conjeveram. He had not, however, moved from his place above 300 or 400 yards, when, being quite overcome, he was obliged to lie all night in the open air, during which time there fell two heavy showers of rain. Next morning he proceeded to Conjeveram; but after walking about a mile, was met by some of the enemy's horsemen, by whom he was brought back prisoner, and obliged to walk without any assistance. When delivered up to the enemy's sepoy, he was so stiff with his wounds, that he could not stoop or even bend his body in the smallest degree.

"The quarter-master serjeant of artillery received so deep a cut across the back-part of his neck, that he was obliged to support his head with his hands in order to keep it from falling to a side all the journey. The least shake or unevenness of the ground made him cry out with pain. He once and again ceased from all attempts to proceed; but being encouraged and conjoined by his companions to renew his efforts, he did so, reached the camp, and at last, as well as Mr Bowser, recovered."—It is also remarkable, that, according to our author, out of 32 wounded persons only six died; though one would be apt to think that the excessively severe usage they met with would have killed every one.

India.

killed on the spot: the loss on Hyder Aly's part was so great that he industriously concealed it, being enraged that the conquest of such an inconsiderable body should cost him so many of his bravest troops. He seemed ever after to consider the English with an extreme degree of terror; inasmuch that, notwithstanding his pretended exultation on account of the present victory, he no sooner heard a report of Sir Hector Munro's march to attack him, than he left his camp in the utmost confusion, abandoning great part of his tents and baggage, as well as the vast numbers that had been wounded in the late action.

130
Sir Eyre
Coote ap-
pointed to
the com-
mand of
the army.

On the news of Colonel Baillie's disaster, the supreme council of Bengal requested Sir Ayre Coote to take upon him the management of the war; for the carrying on of which a large supply of men and money was instantly decreed. This was readily undertaken by the illustrious officer just mentioned, notwithstanding his very precarious state of health at that time; and from the moment he took upon him the management of affairs, the fortune of the war was changed.

The spirit of dissention, which for a long time had infected the presidency of Madras, was indeed the true cause of all the misfortunes that had happened. This was found by Sir Eyre Coote to be even greater than he had heard by report: the respect and confidence of the natives was wholly lost; the complaints of the officers and soldiers were loud and acrimonious; an inactivity prevailed in all the councils and operations, while the enemy carried every thing before them. Sir Hector Munro had been greatly harassed on his march to Madras, whither he had retreated after Colonel Baillie's disaster; the forces of Hyder Aly had infected all the places in that neighbourhood in such a manner as in a great measure to cut off all supplies; and Arcot, the capital city of the most faithful ally the British ever had, was taken by storm, together with an adjoining fort, by which means an immense quantity of ammunition and military stores fell into the hands of the enemy.

No sooner had Sir Eyre Coote taken upon him the command of the British forces, than his antagonist thought proper to change his plan of operations entirely. He now detached large parties of his numerous forces to lay siege to the principal fortresses belonging to the company; while, with the bravest and best disciplined part, he kept the field against the British commander in person. On the very first appearance of the British army, however, his resolution failed, and he abandoned the siege of every place he had invested, retiring to a considerable distance on the other side of the river Palaar, without even disputing the passage of it, as it was expected he would have done.

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Pondicherry
revolts,
but is
quickly
reduced.

A respite being thus obtained from the incursions of this formidable enemy, the next operation was to secure Pondicherry, whose inhabitants had revolted. They were, however, easily disarmed, their magazines seized, and all the boats in their possession destroyed; in consequence of which precaution, a French squadron that soon after appeared off Pondicherry was obliged to depart without being furnished with any necessaries. But in the mean time Hyder Aly having drawn large reinforcements from all parts of his dominions, resolved to try his fortune in a pitched battle.

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His army amounted to 200,000 men, 40,000 of whom were cavalry and 15,000 well disciplined sepoy. Still, however, he durst not openly attack the British army in the field, but took a strong post from whence he might harass them on their march. Sir Eyre Coote, however, was not on his part backward to make the attack; and on the other hand Hyder Aly prepared to engage him with all possible advantage. The battle was fought on the 1st of July 1781; and notwithstanding the vast superiority of Hyder Aly's army, he was routed with great slaughter. The Indians, however, made a much more obstinate resistance than Hyder Aly; usual; the engagement lasted from nine in the morning till four in the afternoon, and the deficiency of the English in cavalry prevented them from pursuing the advantage they had gained.

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132
Defeats
Hyder Aly;

Notwithstanding the loss of this battle, Hyder Aly was soon encouraged to venture another. This was fought on the 27th of August the same year, on the very spot where Colonel Baillie had been defeated. It was more obstinately contested than even the former, being continued with great fury from eight in the morning to near dusk. A number of brave officers and soldiers fell on the part of the British, owing chiefly to the terrible fire of the enemy's artillery and the advantageous position of their troops. At last, however, the Indian army was totally defeated, and driven from every post it had occupied; though from the obstinate resistance made at this time, Hyder began to entertain hopes that his forces might, by a succession of such battles, be at last enabled to cope with the English. He therefore ventured a third battle in some weeks after, but was now defeated with greater loss than before. Undiscouraged by this bad success, however, he laid siege to Vellore; and expecting that the relief of it would be attempted, seized a strong pass through which he knew the British army must direct their march. The British commander accordingly advanced, and found the enemy in possession of some very strong grounds on both sides of a marsh through which he was obliged to pass. Here he was attacked on all sides, but principally on the rear, the enemy directing their force principally against the baggage and convoy of provisions designed for the garrison. Their utmost efforts, however, were unsuccessful, and Sir Eyre Coote forced his way to Vellore in spite of all opposition. Hyder Aly did not fail to wait his return through the same pass; and having exerted his utmost skill in posting his troops, attacked him with the utmost vigour: but though the English were assailed in front and in both flanks at once, and a heavy cannonade kept up during the whole time of the engagement, the Indians were at last defeated with great slaughter.

133
Gains a se-
cond vic-
tory.

134
Hyder de-
feated a
third time.

135
A fourth
victory
gained by
the Eng-
lish.

By these successes the presidency of Madras were now allowed so much respite, that an enterprize was planned against the Dutch settlement of Negapatam, situated to the south of Madras, and in the neighbourhood of Tanjour. A very inconsiderable force, however, could yet be spared for this purpose, as Hyder Aly, though so often defeated, was still extremely formidable. Sir Hector Munro had the management of the expedition: and so furious was the attack of the British sailors, that the troops left to guard the avenues to the place were defeated at the very first onset.

136
Dutch set-
tlement of
Negapatam
reduced.

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onset. A regular siege ensued; which, however, was of very short duration, a breach being soon made, and the garrison surrendering prisoners of war.

137
And like-
wise Trin-
comale.

The loss of Negapatam was quickly followed by that of Trincomale. Admiral Hughes, who had conveyed Sir Hector Munro with the land forces to that place, and assisted him with his sailors, immediately after its surrender set sail for Trincomale, where he arrived about the middle of January 1782. The fort of that name was quickly reduced; but the main strength of the settlement consisted in a fort named *Ostenburgh*, the principal place on the island, and by the capture of which the whole settlement would be reduced. This fort stands on a hill which commands the harbour, but is itself overlooked by another hill at the distance of no more than 200 yards. Though the gaining of this post was undoubtedly to be attended with the loss of the fort, it does not appear that the governor even attempted to defend it. A British detachment of sailors and marines therefore took possession of it, when the admiral sent a summons of surrender, representing the inutility of making any farther defence after the loss of such a post; and being extremely desirous of avoiding an effusion of blood, repeated his arguments at several different times. The governor, however, proving obstinate, the place was taken by storm, with the loss of about 60 on the part of the British, and very little on that of the Dutch, the victors giving quarter the moment it was asked. Four hundred Europeans were taken prisoners; a large quantity of ammunition and military stores, with a numerous artillery, were found in the place; and two Indianmen richly laden, with a number of small trading vessels, were taken in the harbour.

138
Admiral
Suffrein ar-
rives with a
powerful
fleet from
Europe.

A more formidable enemy, however, now made his appearance on the coast of Coromandel. This was Suffrein the French admiral; who setting out from his native country with 11 ships of the line and several stout frigates, had fallen in with the *Hannibal* of 50 guns, and taken her when separated from her consorts. This ship, along with three others, a 74, a 64, and a 50, had been sent out to the assistance of Sir Edward; and the three last had the good fortune to join him before the arrival of M. de Suffrein. The latter, supposing that he had not yet received this reinforcement, bore down upon the English squadron at Madras, to which place they had sailed immediately after the capture of Trincomale. Perceiving his mistake, however, he instantly bore away. The English admiral pursued, took six vessels, five of them English prizes, and the sixth a valuable transport laden with gunpowder and other military stores, besides having on board a number of land-officers and about 300 regular troops. This brought on an engagement, in which M. Suffrein, perceiving the rear division of the British fleet unable to keep up with the rest, directed his force principally against it. The ships of Admiral Hughes himself and Commodore King sustained the most violent efforts of the French, having mostly two, and sometimes three, vessels to contend with. Thus the commodore's ship was reduced almost to a wreck; but about six in the evening, the wind becoming more favourable to the English, the squadron of the enemy were obliged to draw off. The loss of men on the part of the British amounted to little more than 130

139
Engage-
ment be-
tween him
and Sir Ed-
ward
Hughes.

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killed and wounded, but that of the French exceeded 250.

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After the battle Sir Edward returned to Madras; but meeting with no intelligence of Suffrein at that place, he made the best of his way for Trincomale, being apprehensive of an attack upon that place, or of the intercepting of a convoy of stores and reinforcements at that time expected from England. Suffrein had indeed got intelligence of this convoy, and was at that time on his way to intercept it. This brought the hostile fleets again in sight of each other; and as the British admiral had been reinforced by two ships of the line, he was now better able to encounter his adversary. A desperate battle ensued, which continued till towards night, when the ships on both sides were so much shattered, that neither could renew the engagement next day.

140
A second
battle.

Though these engagements produced nothing decisive, they were nevertheless of the utmost prejudice to the affairs of Hyder Aly, who was thus prevented from receiving the succours he had been promised from France; and he was still farther mortified by the defeat of his forces before Tellicherry, which place he had blocked up since the commencement of hostilities. This last misfortune was the more sensibly felt, as an open passage was now left for the English into those countries best affected to Hyder. His bad success here, however, was in some measure compensated by the entire defeat of a detachment of about 2000 English infantry and 300 cavalry under Colonel Braithwaite, a brave and experienced officer. This detachment, consisting of chosen troops from Sir Eyre Coote's army, lay encamped on the banks of the Coleroon, which forms the northern boundary of Tanjour. Tippoo Saib having procured exact intelligence of the situation of this party, formed a design of attacking it while no danger was suspected on account of the distance of Hyder Aly's army. He set out on this design with an army of 15,000 horse and 5000 foot, accompanied by a body of French regulars; and having crossed the Coleroon, suddenly surrounded the British forces on all sides. The colonel, perceiving his danger, formed his men into a square, distributing the artillery to the several fronts, and keeping his cavalry in the centre. In this situation he resisted for three days the utmost efforts of his numerous enemies, always compelling them to retreat with great loss. At last General Lally, rightly conjecturing that the strength of the English must be exhausted and their numbers thinned by such desperate service, proposed that the French infantry, which was fresh and entire, should attack one of the fronts of the square, while the forces of Tippoo should do the same with the other three. This last attack proved successful; the British forces were broken with great slaughter, which however was stopped by the humanity of the French commander; who even obtained from Tippoo Saib the care of the prisoners, and treated them with a tenderness and humanity they certainly would not otherwise have experienced. A number of British officers, however, perished in the engagement, and only one remained unwounded.

141
Hyder
Aly's forces
defeated at
Tellicherry.

142
Colonel
Braith-
waite's de-
tachment
cut off by
Tippoo
Saib.

In the mean time, the succours from France, so long expected by Hyder, made their appearance. As soon as a junction was formed, they proceeded, under

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taken.

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the

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244
Hyder
Aly defeat-
ed a fifth
time by Sir
Byre Coote.

the command of M. Duchemin, to invest Cuddalore; which not being in any situation to stand a siege, was surrendered on capitulation. In like manner some other places of smaller consequence were reduced, until at last being joined by Hyder's numerous forces, they determined to lay siege to Vandervash, a place of great importance, and the loss of which would have been extremely detrimental to the English. This quickly brought Sir Eyre Coote with his army to its relief; but Hyder Aly, notwithstanding his being reinforced by the French, durst not yet venture a battle in the open field. On this the British commander proceeded to attack Arnee, the principal deposit of Hyder's warlike stores and necessaries. Thus the latter was obliged to quit his advantageous ground; but he did so with such secrecy and speed, that he came upon the British army unawares while preparing for its last march to Arnee, now only five miles distant. Perceiving that the march of the British troops was through low grounds, encompassed on most parts with high hills, he planted his cannon upon the latter; from which he kept a continual and heavy fire on the troops below, while his numerous cavalry attacked them on every side. Notwithstanding all disadvantages, the British commander at last closed in with the enemy; and after an obstinate dispute completely routed them. Neither this, however, nor any other engagement with Hyder Aly, ever proved decisive; for as the want of cavalry prevented the British general from pursuing his advantage, so that of his antagonist was so numerous, that by it he always covered his retreats in such an effectual manner as to lose but few men, and in a short time to be in a condition to act again on the offensive. This was remarkably the case at present; for notwithstanding this defeat, which happened on the 2d of June 1782, he cut off an advanced body of the British army five days after; and harassed the whole in such a manner, that Sir Eyre Coote, notwithstanding his success, was obliged to move nearer Madras; soon after which, he was obliged, on account of his bad state of health, to relinquish the command of the army to General Stuart.

245
A third sea-
fight, great-
ly to the dis-
advantage
of the
French.

Hyder Aly now perceiving that he was likely to be attended with no success by land, began to rest his hopes on the success of the French by sea. He therefore earnestly requested M. Suffrein, who possessed at that time a decisive superiority in the number of ships, to lose no time in attacking the British Squadron before it could be joined by a reinforcement which was then on its way, and was reported to be very formidable. As the French commander was by no means deficient in courage, a third engagement took place on the 5th of July 1783. At this time the British had the advantage of the wind, the battle was much more close, and the victory more plainly on their side. It is said indeed, that had not the wind fortunately shifted in such a manner as to enable the French to disengage their ships, a total and ruinous defeat would have ensued. After the engagement, the French admiral proceeded to Cuddalore, having received intelligence that a large body of French troops in transports was arrived off the island of Ceylon, in company with three ships of the line. As this seemed to afford hopes of retaliation, he used such diligence in refitting his ships, that the fleet was able to put to sea in the be-

ginning of August. His intention was to make an attempt on Trincomale; and so well were his designs conducted, that Sir Edward received no intelligence of the danger, till a British frigate chasing a French one, which took shelter with the Squadron at Trincomale, discovered it by this accident, and hastened back with the news to Madras. It was now, however, too late; the place was not in a condition to resist a siege; and the French batteries having silenced those of the fort in two days, a capitulation took place on the last day of August.

246
Who ne-
vertheless
take Trin-
comale.

Sir Edward Hughes having been detained by contrary winds, did not arrive at Trincomale before the 2d of September, when he had the mortification to see the forts in the hands of the French, and that Suffrein was in the harbour with 15 sail of the line while he had only 12. He did not hesitate at venturing an engagement with this inferiority, nor did M. Suffrein decline the combat. The event of the battle was no other than shattering the fleets and killing and wounding a number of men on both sides. In this, however, as well as in the other engagements, the superiority of the English was very manifest; and in entering the harbour of Trincomale the French lost a 74 gun ship.

247
A fourth
battle be-
tween the
French and
English
fleets.

The loss of Trincomale was severely felt by the English; for while the French lay safely in the harbour refitting their Squadron, the English were obliged for that purpose to sail to Madras. Here the fleet was assailed by one of the most dreadful tempests ever known on that coast. Trading vessels to the number of near 100 were wrecked, as well as those for Madras laden with rice, of which there was an extreme scarcity at that place. Thus the scarcity was augmented to a famine, which carried off vast numbers of the inhabitants before supplies could arrive from Bengal. The continuance of the bad weather obliged Sir Edward with his whole Squadron to sail to Bombay; and there he did not arrive till towards the end of the year, when his Squadron was so much shattered, that, in order to repair it with proper expedition, he was obliged to distribute it between the dock-yards of Bombay and the Portuguese settlement at Goa.

248
English
fleet shat-
tered by a
dreadful
tempest.

In the mean time Sir Richard Bickerton arrived at Bombay from England with five men of war, having on board 5000 troops, after a very favourable passage; having neither seen nor heard of the bad weather which had desolated the coasts of India. It was likewise the intention of France to signalize the campaign of this year by an immense force both by sea and land in India. Exclusive of the forces already on the coast of Coromandel, they were to be joined by 5000 more, all regulars, from their islands on the African coast. Suffrein was to be reinforced by several ships of the line, when it was hoped that a decided superiority at sea would be obtained over the English; while their superior numbers and artillery on shore would render them invincible by any force that could be brought against them. To oppose these designs it was deemed necessary by the presidency of Bombay to make a powerful diversion on the coast of Malabar. Here was situated the kingdom of Mysore, the sovereignty of which had been usurped by Hyder Aly under the title of *Dayva*, as that of the Mahrattas was by a person styled *Pajbwa*. This kingdom is nearly in the same parallel

with

India. with Arcot. To the northward is the kingdom of Canara, which is said to have been the favourite possession of Hyder Aly; the name of its capital is Bidnore, which also gives name to an extensive territory, and was by Hyder changed to that of Hydernagur. The expedition had been set on foot as early as the end of the year 1781; a strong body of forces under the command of Colonel Humberstone had taken the two cities of Calicut and Panyan, besides others of lesser note, and penetrated into the inland country, which is there difficult and dangerous. Having here made himself master of a place called *Mongarry Cotta*, of which the situation commanded the entrance into the inner parts of the country, he proceeded to attack Palatacherry, a considerable town at some miles distance; but being suddenly environed with a numerous and hostile army, instead of making himself master of the place, it was not without the utmost difficulty that he made his escape after losing all his provisions and baggage. A great army, consisting of 20,000 foot and 10,000 horse, under Tippoo Saib, also advanced against him with such celerity, that the colonel had only time to retreat to Panyan, where he was superseceded in the command by Colonel Macloed, and soon after the place was invested by the forces of the enemy, among whom was General Lally with a considerable body of French. Two British frigates, however, having come to the assistance of the place, rendered all the attempts of the enemy to reduce it abortive. At last, Tippoo Saib, impatient of delay, made a vigorous effort against the British lines; but though both the Indian and French commanders behaved with great bravery, the attack not only proved unsuccessful, but they were repulsed with such loss as determined Tippoo to abandon the siege of the place, and retire beyond the river of Panyan.

150
Unfortunate expedition of General Matthews.

As soon as the presidency of Bombay were acquainted with the success of Colonel Humberstone, General Matthews was dispatched to his assistance with a powerful reinforcement. This expedition, which began the campaign of 1783 in the kingdom of Canara, has been related with circumstances so disgraceful, and so exceedingly contrary to the behaviour for which the British troops are remarkable, that we are totally at a loss to account for them. On the one hand, it seems surprising how the national character could be forfeited by a particular body, and not by any other part of the army; and on the other, it seems equally surprising why such calumnies (if we suppose them to be so) should have arisen against this particular body and no other part of the army. Such accounts of it, however, were published as raised the indignation of the military gentlemen, who thought proper to publish a vindication of themselves. In the Annual Registers, from whence, next to the Gazettes and News-papers, the generality receive what they look upon to be authentic intelligence, the character of this army is treated with the highest asperity. "In the story of the conquest and recovery of Canara (says the New Annual Register), the Spaniards may be said to be brought a second time upon the scene, but not to sit down in sullen and insolent prosperity after all their crimes. The Spaniards of Britain were overtaken in the midst of their career; and he who is more of a man than an Englishman, will rejoice in the irregular and unmen-

151
The army charged with great cruelty in this expedition.

fured, but at the same time the just and merited, vengeance that was inflicted upon them by the prince whose dominions they were ravaging!" In support of this dreadful exclamation the following account is given of the expedition. It began with the putting in execution a design formed by General Matthews of carrying the war into the heart of Hyder Aly's dominions. For this purpose the English invested the city of Onore, situated about 300 miles to the south of Bombay, and one of the principal places in the country of Canara. "It was taken by assault (says Dr Andrews) with great slaughter, and plundered with circumstances of avarice and rapine that disgraced the victors; among whom, at the same time, great discontents arose concerning the division of the spoil." "No quarter (says the Annual Register) was given by the victorious English; every man they met was put to the sword. Upon this occasion we beg leave to transcribe three lines from the private letter of one of the officers concerned in the expedition. 'The carnage (says he) was great: we trampled thick on the bodies that were strewed in the way. It was rather shocking to humanity; but such are only secondary considerations, and to a soldier, whose bosom glows with heroic glory, they are thought only accidents of course; his zeal makes him aspire after farther victory.' This part of the peninsula had hitherto been untouched by the barbarous and unsparing hands of Europeans, and of consequence was full of riches and splendor. In the fortrefs of Onore were found sums of money to an unknown amount, besides jewels and diamonds. A considerable part of this appears to have been secured as private plunder by General Matthews. The complaints of the military were loud; they thought, and naturally, that the acquisition of riches was the fair and reasonable consequence of the perpetration of bloodshed. But their commander turned a deaf ear to their representations; and hastened, by adding new laurels to his fame, to hide the slander that might otherwise rest upon him."

From Onore the army proceeded to the nearest fortresses on the sea-coast, More and Cundapour. Here they were joined by a reinforcement from Bombay under the command of Colonels Macloed and Humberston, with positive orders to proceed for Bidnore or Hydernagur the capital of Canara. On this General Matthews marched for the mountains called the *Ghauts*, where there is a pass three miles in length, though only eight feet wide, and which was then strongly fortified and defended by a vast number of the natives. "The English (say our authors), however, had already obtained a considerable reputation by their executions; and the use of the bayonet, the most fatal instrument of war, and which was employed by them on all occasions, created such an extreme terror in the enemy, as to enable them to surmount this otherwise impregnable defile."

The gaining of this pass laid open the way to Bidnore the capital, to which a summons was now sent. An answer was returned, that the place was ready to submit, provided the inhabitants were not molested, and the governor was permitted to secure his property. The wealth of this city was undoubtedly great, but the estimates of its amount are very different. By the accounts of Bombay it was stated only at 175,000 l.

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while the officers concerned in the expedition say that it was not less than 1,200,000*l.* or even 1,920,000*l.*; and even this was only public property; that seized upon by the soldiers, and which belonged to private persons, was undoubtedly very considerable also.

This treasure was at first shown by the general to his officers, and declared to belong to the army; but he afterwards told them that it was all the property of the Mahomedan governor, and had been secured to him by the terms of the surrender. It was therefore sent to Cundapour under the convoy of Lieutenant Matthews, brother to the general, to be thence transmitted to Bombay; but whether any part of it ever reached that settlement or not was never known. The discontents of the army were now carried to the utmost height; and the contest became so serious, that Colonels Macleod, Humberstone, and Shaw, quitted the service altogether, and returned to Bombay. The officers charged their general with the most insatiable and shameful avarice; while he, in return, accused his whole army of doing every thing disrespectful and injurious to him; of paying no regard to order and discipline, and of becoming loose and unfeeling as the most licentious freebooters.

From Bidnore detachments were sent to reduce several fortresses, the principal of which was Ananpore or Anantpore. Here orders were issued for a storm and no quarter. Every man in the place was put to death, except one horseman who made his escape after being wounded in three places. "The women, unwilling to be separated from their relations, or exposed to the brutal licentiousness of the soldiery, threw themselves in multitudes into the moats with which the fort was surrounded. Four hundred beautiful women, pierced with the bayonet, and expiring in one another's arms, were in this situation treated by the British with every kind of outrage."

This exploit was succeeded by the reduction of Carwa and Mangalore, which completed the reduction of Canara, when General Matthews put his army in cantonments for the rainy season.

This rapid success was owing to the death of Hyder Aly, which happened in the end of the year 1782. His son Tippoo Saib, however, having taken possession of the government, and settled his affairs as well as time would allow, instantly resumed his military operations. On the 7th of April 1783 he made his appearance before Bidnore, so that General Matthews had scarce time to collect a force of 2000 men, and to write to Bombay for a reinforcement. But, however necessary the latter must have been in his circumstances, the presidency were so much prejudiced against him by the unfavourable reports of his officers, that they suspended him from his commission, appointing Colonel Macleod to succeed to the command of the army.

Tippoo Saib now advanced with a vast army, supposed not to be fewer than 150,000 men, covering the hills on each side of the metropolis as far as the eye could reach. The army of General Matthews, altogether unable to cope with such a force, were quickly driven from the town, and forced to take refuge in the citadel. Tippoo having cut off their retreat by gaining possession of the Ghauts, laid close siege to the fortress; which in less than a fortnight was obliged

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to capitulate. The terms proposed were, that all public property should remain in the fort; that the English should engage not to act against Tippoo for a stipulated time; that they should march out with the honours of war; that they should pile their arms, and have full liberty to proceed unmolested with their private property to the sea-coast, from thence to embark for Bombay; and in this capitulation the garrisons of Annapour and other inland fortresses were also included.

All these terms were broken by Tippoo, who said that they had forfeited their title to liberty by a breach of the articles of capitulation, in embezzling and secreting the public money, which was all, in good faith, to be delivered up. That this was really the case seems to be universally acknowledged. In the Annual Register we are told, that "to prevent too much money being found in the possession of one man, the general ordered his officers to draw on the paymaster-general for whatever sums they wanted. When the fort was surrendered to the Sultan, there was not a single rupee found in it." By this circumstance the fate of the garrison was decided. General Matthews was sent for next morning to a conference. He was not, however, admitted to his presence, but immediately thrown into chains. Most of the other principal officers were, on various pretences, separated from the army. The general and his companions were conducted to Seringapatnam the capital of Myfore; and after having experienced a variety of severities, were at last put to death by poison. In this manner the general and 20 officers perished. The poison administered was the milk of the cocoa-tree, which is said to be very deadly.

The above account was repeatedly complained of as partial, and at last openly contradicted in a pamphlet intitled "A Vindication of the Conduct of the English Forces" employed in that expedition, and published by order of the East India Company. In this pamphlet the circumstance most found fault with was that regarding the women at Anantpore, which was positively contradicted. On this account therefore the publishers of the above-mentioned work retract that part of their narrative, as being founded in misrepresentation. Notwithstanding this vindication, however, they still draw the following conclusions. "It is already sufficiently evident, how little has been effected by this vindication of the Bombay officers. The great outlines of the expedition remain unaltered. It is still true that a remarkable degree of severity was employed in the field; that, in the capture of the fortresses of Canara, the principle of a storm and no quarter was very frequently applied; and that the acquisition of money was too much the governing object in every stage of the undertaking. The vindication of the officers has therefore done them little service; and it happens here, as it generally does in the case of an imperfect reply, that the majority of the facts are rather strengthened and demonstrated by the attempt to refute them. With respect to the conclusion of the story, the treasures of Hydernagur, and the charge brought against them by Tippoo, that they had broken the terms of the capitulation, and that when the fort was surrendered not a rupee was to be found in it; these circumstances are passed over by the officers in the profoundest silence. It was this that roused the Sultan to

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vengeance; and it is to this that he appeals for his justification in disregarding a capitulation which had been first dissolved by the vanquished English."

The vindication above alluded to was signed by one major and 52 subaltern officers. It seems not, however, to have given entire satisfaction to the military gentlemen themselves, as other vindications have appeared said to be written by officers; but these being anonymous, can be supposed to add very little weight to that already mentioned, where such a respectable body have signed their names. We shall therefore drop a subject so disagreeable, and the investigation of which at the same time is entirely foreign to the plan of this work.

It now remains to give some account of the war with the Mahrattas, begun, as was formerly hinted, on account of the protection afforded to the assassin Roganaut-row. This man had formerly obliged the Mogul to take shelter in the English factory at Bengal; but being unable to keep up his credit among his countrymen, was expelled as already related. On his arrival at Bombay, an alliance was formed betwixt him and the English government; by which the latter engaged to replace him in the Mahratta regency in consideration of some valuable cessions of territory. The supreme council of Bengal, however, disowned this treaty, and concluded one with the Mahrattas in the month of March 1776; by which it was agreed that they should provide for Ragobah's subsistence according to his rank, on condition of his residing in their country. This being not at all agreeable to Ragobah, he fled once more to Bombay, where a new confederacy was entered into for his restoration. The council of Bengal approved of this on account of the approaching rupture with France; and in consequence of this, a detachment was, in February 1778, ordered to march across the continent of India. By some mismanagements in this expedition the whole army was obliged to capitulate with the Mahratta general on the 9th of January 1779. One of the terms of the capitulation was, that a body of troops which were advancing on the other side should be obliged to return to Bengal. But General Goddard, the commander of these forces, denying the right of the council of Bengal to remand him, proceeded on his march, and arrived on the 18th of February. Here he received orders to conclude a new treaty, if it could be obtained on easier terms than that of the capitulation by which it had been engaged to cede all our acquisitions in the country of the Mahrattas.

Such extreme disregard to any stipulations that could be made, undoubtedly provoked the Mahrattas, and induced them to join in the confederacy with Hyder Aly already mentioned. The war, however, was successfully begun by General Goddard in January 1780. In three months he reduced the whole province of Guzerat. Madajee Sindia the Mahratta general advanced to oppose him; but as he did not choose to venture a battle, the English general stormed his camp, and totally routed him. Other exploits were performed in the course of this campaign; during which the governor-general (Mr Hastings) seeing no hopes of an accommodation, entered into a treaty with the rajah of Gohud, and with his consent Major Popham reduced a

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fortress in his dominions named *Gualior*, garrisoned by the Mahrattas, and hitherto reckoned impregnable.

These successes were followed by the dreadful incursions of Hyder Aly already related, which put a stop to the conquests of General Goddard; all the forces he could spare being required to assist the army under Sir Eyre Coote. The last exploit of General Goddard was the reduction of the island of Salfette, and of a strong fortress named *Bassein* in its neighbourhood. The army of Sindia, consisting of 30,000 men, was also defeated this year by Colonel Carnac; and the Mahrattas, disheartened by their losses, consented to a separate peace with the English, leaving Hyder Aly to manage the war as he thought proper.

In the mean time, however, the expences incurred by these wars were so high, that Mr Hastings, who was obliged to furnish them some how or other, was reduced to the greatest difficulties. For this purpose not only all the treasure of Bengal was exhausted, but it was found necessary to draw extraordinary contributions from the British allies, which was productive of many disagreeable circumstances. One of the most remarkable was the revolt of Benares. The rajah of this country had formerly put himself under the protection of the English, who on their part agreed to secure his dominions to him on condition of his paying an annual subsidy to the nabob of Oude. In 1770 the rajah died, and was succeeded by his son Cheit Sing, who held the sovereignty at the time we speak of. On the death of the nabob in 1775, a new treaty was made with his successor, by which the sovereignty of Benares was transferred to the East India company, an acquisition equivalent to 240,000 l. *per annum*; at the same time that the subsidy paid by Suja Dowla, and which, by Lord Clive, had been fixed at 36,000 l. and afterwards raised to 252,000 l. was now augmented to 312,000 l. *per annum*.

On receiving intelligence in July 1778, that war had actually commenced between France and England, Cheit Sing was required to pay 50,000 l. as his share of the public burdens. Such a demand was paid with extreme reluctance on the part of a prince who already contributed 240,000 l. and probably thought that an abundant equivalent for the protection enjoyed. The same requisition, however, was made the two succeeding years, but with a promise that the demand should cease when peace was restored. Instead of any present alleviation, however, a body of troops was also quartered upon him, and he was likewise obliged to pay for their maintenance, lest he should not voluntarily pay the additional 50,000 l. In November 1780, in addition to all these demands, he was also required to send into the field such a body of horse as he could spare; but this requisition, owing to some misunderstanding, was never complied with.

In July 1781 Mr Hastings having, it is said, received some intelligence that the oppressed rajah meditated rebellion, set out on a visit to the nabob of Oude, and in his way proposed to clear up the misunderstanding with him. The method by which he intended to clear up this misunderstanding was to lay a fine upon the poor prince of 400,000 l. or 500,000 l.; and as a reason for doing so, it was alleged that the late rajah had left a million sterling in his treasury; a

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sum which was continually increasing. Cheit Sing, advanced to the borders of his territories to meet the governor general, behaved with all imaginable submission; and having got private intelligence of what was meditated against him, offered to pay down 200,000l. This was refused; and the governor general having reached the capital, forbid the rajah his presence, and by a letter acquainted him with his causes of complaint. Cheit Sing sent a very submissive answer; but as he endeavoured to exculpate himself, Mr Hastings was so far from being satisfied, that he put the prince under an arrest.

Such an unheard-of proceeding excited the utmost surprise and resentment in subjects accustomed to regard their sovereign with a degree of reverence little short of adoration. On the very day of the arrest they assembled tumultuously, cut in pieces the guard which had been set on the palace, and carried off their prince in triumph. It does not appear, however, that this was any other than a transitory tumult; for though they could easily have cut off the governor-general, they made no attempt against him. Cheit Sing protested his innocence, and made the most unlimited offers of submission, but all in vain. His government was declared vacant, and the zemindary bestowed on the next heir; the annual subsidy to the government of Bengal was augmented from 240,000l. to 400,000l. annually. The miserable rajah was forced to fly his country; and his mother, though promised leave to retire upon conditions, was attacked in her retreat and plundered by the soldiers. After all his endeavours to procure money, however, Mr Hastings found this adventure turn out much less profitable than he had expected; for the treasury of the fugitive prince was seized and retained by the soldiery.

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New treaties with the nabob of Oude.

As to the nabob of Oude, a new treaty was concluded with him; the design of which was evidently to ease him of some of the burdens to which he was at that time subjected. Part of the British troops were therefore withdrawn from his dominions. As Fizulla Khan, the most prosperous of his dependents, had been called upon to furnish a body of 5000 horse to join the nabob's army, and had not complied with the requisition, the guarantee of his treaty with the nabob, formerly executed, was withdrawn; but it being afterwards discovered that his territory was not equivalent to the claims of the governor, the treaty was renewed on payment of a slight fine. As the widow of Sujah Dowla was suspected of favouring the late rajah Cheit Sing, the reigning prince was allowed to reclaim the treasures of his father in her possession, and likewise to deprive her of a small province she had in possession, on condition of paying her a certain stipulated allowance annually. The treasures were seized as payment of the debts of the prince to the company.

Hostilities continued in India between the French and English till the year 1783 was far advanced, and long after tranquillity had been restored to other parts of the world. In the beginning of the season for action the governor and council of Bengal determined to send an ample supply to the presidency of Madras, that so they might be enabled to put an end to the war, which Tippoo seemed willing to prosecute with even more vigour than his father had done. For this

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purpose Sir Eyre Coote, who, for his health, had gone to Bengal by sea, set sail once more for Madras, being intrusted with a large sum of money for the necessary expences of the war. In his passage he was chased for 48 hours by two French men of war. The solicitude and fatigue he underwent during this time, being almost constantly upon deck, occasioned a relapse, so that he died in two days after his arrival at Madras. His death was greatly lamented, as the greatest expectations had been formed of an happy conclusion being put to the war by his extraordinary military talents, for which he had already acquired so great reputation in India.

The invasion of Tippoo's dominions having called him off from the Carnatic, general Stuart took the opportunity of attacking him in another quarter. Colonel Fullarton was dispatched with a large body of troops to invade the province of Coimbatour. This he executed with great success; over-running the country, taking several fortresses, and making a very alarming diversion on this side of Tippoo's dominions. General Stuart, however, having still greater designs in view, was obliged to recal this gentleman in the midst of his success. The siege of the strong fortress of Cuddalore was the operation which now engaged his attention. It was now become the principal place of arms belonging to the French; was strongly fortified, and garrisoned by a numerous body of the best troops in France, as well as a considerable number of Tippoo's choicest forces. The siege therefore proved so difficult, that though the English displayed the utmost valour and military skill, they were not able to reduce the place until hostilities were interrupted by the news of a general pacification having taken place in Europe. In this siege a remarkable circumstance took place, viz. that of a corps of sepoy grenadiers encountering and overcoming the French troops opposed to them with fixed bayonets. For this remarkable instance of valour, they not only received the highest applause at the time, but provision was made for themselves and families by the presidencies to which they belonged.

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Cuddalore
unsuccessfully besieged by the English.

After the reduction of Hydernagur, and the destruction of the army under general Matthews, the English possessed only three places of consequence in the kingdom of Canara. These were Mangalore, Onore, and Carwa. The siege of all these places was undertaken at once. Mangalore, the principal port in the country, was defended by a very numerous garrison under Major Campbell. Tippoo sat down before it on the 19th of May; and the attack and defence were both conducted with the greatest spirit and activity. Notwithstanding the utmost efforts of the besiegers, however, and that the garrison were reduced to the last extremity for want of provisions, they held out in spite of every difficulty, until the general pacification being concluded, the place was afterwards delivered up. In other parts nothing more happened than an indecisive engagement between M. Suffrein and admiral Hughes; so that the British empire in Bengal was for that time fully established, and has since continued unmolested by foreign enemies, till very lately, that the ambition of Tippoo Saib has again prompted him to invade the territories of the nabob, an ally of Britain. This has again brought on a war with that restless, but able prince; whom the British, however, in conjunction with the Mah-

Indictment. c. 18. may be prosecuted either in the county where the fact is committed, or in any county next adjoining; and if committed in Wales, then in the next adjoining English county: by which is understood to be meant, such English county as, by the statute 26 Hen. VIII. above mentioned, had before a concurrent jurisdiction of felonies committed in Wales. Felonies committed out of the realm, in burning or destroying the king's ships, magazines, or stores, may, by statute 12 Geo. III. c. 24. be inquired of and tried in any county of England, or in the place where the offence is committed. By statute 13 Geo. III. c. 63. misdemeanors committed in India may be tried upon information or indictment in the court of king's-bench in England; and a mode is marked out for examining witnesses by commission, and transmitting their depositions to the court. But, in general, all offences must be inquired into, as well as tried, in the county where the fact is committed. Yet if larceny be committed in one county, and the goods carried into another, the offender may be indicted in either; for the offence is complete in both. Or he may be indicted in England for larceny in Scotland, and carrying the goods with him into England, or *vice versa*; or for receiving in one part of the united kingdom goods that have been stolen in another. But for robbery, burglary, and the like, he can only be indicted where the fact was actually committed: for though the carrying away and keeping of the goods is a continuation of the original taking, and is therefore larceny in the second county, yet it is not a robbery or burglary in that jurisdiction. And if a person be indicted in one county for larceny of goods originally taken in another, and be thereof convicted, or stands mute, he shall not be admitted to his clergy; provided the original taking be attended with such circumstances as would have ousted him of his clergy by virtue of any statute made previous to the year 1691.

When the grand jury have heard the evidence, if they think it a groundless accusation, they used formerly to endorse on the back of the bill, *Ignoramus*; or, We know nothing of it: intimating, that though the facts might possibly be true, that truth did not appear to them. But now they assert in English more absolutely, *Not a true bill*; or (which is the better way) *Not found*: and then the party is discharged without farther answer. But a fresh bill may afterwards be preferred to a subsequent grand jury. If they are satisfied of the truth of the accusation, they then endorse upon it, "A true bill"; or, *Billa vera*. The indictment is then said to be found, and the party stands indicted. But to find a bill, there must at least twelve of the jury agree: for so tender is the law of England of the lives of the subjects, that no man can be convicted at the suit of the king of any capital offence, unless by the unanimous voice of twenty-four of his equals and neighbours; that is, by twelve at least of the grand jury, in the first place, assenting to the accusation; and afterwards by the whole petit jury of twelve more, finding him guilty upon his trial. But if twelve of the grand jury assent, it is a good presentment, though some of the rest disagree. And the indictment, when so found, is publicly delivered into court.

Indictments must have a precise and sufficient certainty.

By statute 1 Hen. V. c. 5. all indictments must set forth the Christian name, surname, and addition of the state and degree, mystery, town, or place, and the county of the offender; and all this to identify his *person*. The *time* and *place* are also to be ascertained, by naming the day and township in which the fact was committed: though a mistake in these points is in general not held to be material, provided the *time* be laid previous to the finding of the indictment, and the *place* to be within the jurisdiction of the court; unless where the place is laid, not merely as a *venue*, but as part of the description of the fact. But sometimes the *time* may be very material, where there is any limitation in point of time assigned for the prosecution of offenders; as by the statute 7 Will. III. c. 3. which enacts, that no prosecution shall be had for any of the treasons or misprisions therein mentioned (except an assassination designed or attempted on the person of the king), unless the bill of indictment be found within three years after the offence committed: and, in case of murder, the time of the death must be laid within a year and a day after the mortal stroke was given. The offence itself must also be set forth with clearness and certainty; and in some crimes particular words of art must be used, which are so appropriated by the law to express the precise idea which it entertains of the offence, that no other words, however synonymous they may seem, are capable of doing it. Thus, in treason, the facts must be laid to be done "treasonably, and against his allegiance;" anciently, *prodiuorè et contra ligentia sua debium*; else the indictment is void. In indictments for murder, it is necessary to say that the party indicted "murdered," not "killed" or "slew," the other; which, till the late statute, was expressed in Latin by the word *murdravit*. In all indictments for felonies, the adverb "feloniously," *felonice*, must be used; and for burglaries also, *burglariter*, or, in English, "burglariously:" and all these to ascertain the intent. In rapes, the word *rapuit*, or "ravished," is necessary, and must not be expressed by any periphrasis, in order to render the crime certain. So in larcinies also, the words *felonice cepit et asportavit*, "feloniously took or carried away," are necessary to every indictment; for these only can express the very offence. Also, in indictments for murder, the length and depth of the wound should in general be expressed, in order that it may appear to the court to have been of a mortal nature: but if it goes through the body, then its dimensions are immaterial; for that is apparently sufficient to have been the cause of the death. Also, where a limb, or the like, is absolutely cut off, there such description is needless. Lastly, in indictments, the *value* of the thing which is the subject or instrument of the offence must sometimes be expressed. In indictments for larcinies this is necessary, that it may appear whether it be grand or petit larceny; and whether intitled or not to the benefit of clergy. In homicides of all sorts it is necessary; as the weapon with which it is committed is forfeited to the king as a deodand. For the manner of process upon an indictment, see PROCESS.

INDICTMENT, in Scots law, the name of the summons, or libel, upon which criminals are cited before the court of justiciary to stand trial. See LAW, Part III. n° clxxxvi. 44.

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indications must have a precise and sufficient cer. Part III. n° clxxxvi. 44.
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Indigofera.

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Indictment
Indigofera.

Plea to INDICTMENT. See *PLEA*.

INDIES, East and West. See *INDIA* and *AMERICA*, and *Plates CCLIV. CCLV.*

INDIGENOUS, of *indigena*, denotes a native of a country, or that which was originally born or produced in the country where it is found. In this sense, particular species of animals and plants are said to be *indigenous* in the country where they are native, in opposition to *EXOTIC*.

INDIGESTION, a crudity or want of due cocation of the food in the stomach. See *DIGESTION*.

INDIGETES, a name which the ancients gave to some of their gods.

There are various opinions about the origin and signification of this word. Some pretend it was given to all the gods in general; and others, only to the demigods, or great men deified. Others say, it was given to such gods as were originally of the country, or rather such as were the gods of the country that bore this name; and others again hold it was ascribed to such gods as were patrons and protectors of particular cities. Lastly, others hold *indigetes* to be derived from *inde genitus* or *in loco degens*, or from *inde* and *ago*, for *dego*, "I live, I inhabit;" which last opinion seems the most probable.

In effect it appears, 1. That these *indigetes* were also called *local gods* (*dii locales*), or *topical gods*, which is the same thing. 2. The *indigetes* were ordinarily men deified, who indeed were in effect local gods, being esteemed the protectors of those places where they were deified; so that the second and third opinions are very consistent. 3. Virgil joins *patrii* with *indigetes*, as being the same thing, *Georg. i. ver. 498.* "*Dii patrii, indigetes.*" 4. The gods to whom the Romans gave the name *indigetes* were, Faunus, Vesta, Æneas, Romulus, all the gods of Italy; and at Athens, Minerva, says Servius; and at Carthage, Dido. It is true, we meet with Jupiter *indiges*; but that Jupiter *indiges* is Æneas, not the great Jupiter; as we may see in Livy, lib. i. cap. 3. in which last sense Servius assures us, *indiges* comes from the Latin *in diis ago*, "I am among the gods."

Among these *indigetes* gods, there is none more celebrated, nor more extensively worshipped, than **HERCULES**.

INDIGO, a dye prepared from the leaves and small branches of the *Indigofera Tinctoria*. See the next article.

INDIGOFERA, the **INDIGO PLANT**: A genus of the decandria order, belonging to the diadelphia class of plants; and in the natural method ranking under the 32d order, *Papilionacea*. The calyx is patent; the carina of the corolla furnished with a subulated patusous spur on each side; the legumen is linear.—There are five species; the most remarkable of which is the *tinctoria*, a native of the warm parts of Asia, Africa, and America, and from which the Indigo dye is made. The root of this plant is three or four lines thick, and more than a foot long, of a faint smell something like parsley. From this root issues a single stem nearly of the same thickness, about two feet high, straight, hard, almost woody, covered with a bark slightly split, of a grey ash-colour towards the bottom, green in the middle, reddish at the extremity, and without appearance of pith in the inside. The leaves, ranged in pairs around the stalk, are of

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an oval form, smooth, soft to the touch, furrowed above, of a deep green on the under-side, and connected by a very short peduncle. From about one third of the stem to the extremity there are ears that are loaded with very small flowers from a dozen to 15, but destitute of smell. The pistil, which is in the midst of each flower, changes into a pod, in which the seeds are inclosed.

This plant requires a smooth rich soil, well tilled, and not too dry. The seed of it, which, as to figure and colour, resembles gun-powder, is sown in little furrows that are about the breadth of the hoe, two or three inches deep, at a foot's distance from each other, and in as straight a line as possible. Continual attention is required to pluck up the weeds, which would soon choak the plant. Though it may be sown in all seasons, the spring is commonly preferred. Moisture causes this plant to shoot above the surface in three or four days. It is ripe at the end of two months. When it begins to flower, it is cut with pruning-knives; and cut again at the end of every six weeks, if the weather is a little rainy. It lasts about two years, after which term it degenerates; it is then plucked up, and planted afresh. As this plant soon exhausts the soil, because it does not absorb a sufficient quantity of air and dew to moisten the earth, it is of advantage to the planter to have a vast space which may remain covered with trees, till it becomes necessary to fell them in order to make room for the indigo.

Indigo is distinguished into two kinds, the *true* and the *bastard*. Though the first is sold at a higher price on account of its superiority, it is usually advantageous to cultivate the other, because it is heavier. The first will grow in many different soils; the second succeeds best in those which are most exposed to the rain. Both are liable to great accidents. Sometimes the plant becomes dry, and is destroyed by an insect frequently found on it; at other times, the leaves, which are the valuable part of the plant, are devoured in the space of 24 hours by caterpillars. This last misfortune, which is but too common, has given occasion to the saying, "that the planters of indigo go to bed rich, and rise in the morning totally ruined."

This production ought to be gathered in with great precaution, for fear of making the farina that lies on the leaves, and is very valuable, fall off by shaking it. When gathered, it is thrown into the steeping-vat, which is a large tub filled with water. Here it undergoes a fermentation, which in 24 hours at furthest is completed. A cock is then turned, to let the water run into the second tub, called the *mortar* or *pounding tub*. The steeping-vat is then cleaned out, that fresh plants may be thrown in; and thus the work is continued without interruption.

The water which has run into the pounding-tub is found impregnated with a very subtle earth, which alone constitutes the dregs or blue substance that is the object of this process, and which must be separated from the useless salt of the plant, because this makes the dregs swim on the surface. To effect this, the water is forcibly agitated with wooden buckets, that are full of holes and fixed to a long handle. This part of the process requires the greatest precautions.

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Indigofera. If the agitation be discontinued too soon, the part that is used in dying, not being sufficiently separated from the salt, would be lost. If, on the other hand, the dye were to be agitated too long after the complete separation, the parts would be brought together again, and form a new combination; and the salt reacting on the dregs would excite a second fermentation, that would alter the dye, spoil its colour, and make what is called *burnt indigo*. These accidents are prevented by a close attention to the least alterations that the dye undergoes, and by the precaution which the workmen take to draw out a little of it from time to time in a clean vessel. When they perceive that the coloured particles collect by separating from the rest of the liquor, they leave off shaking the buckets, in order to allow time to the blue dregs to precipitate to the bottom of the tub, where they are left to settle till the water is quite clear.—Holes made in the tub, at different heights, are then opened one after another, and this useless water is let out.

The blue dregs remaining at the bottom having acquired the consistence of a thick muddy liquid, cocks are then opened, which draw it off into the settler. After it is still more cleared of much superfluous water in this third and last tub, it is drained into sacks; from whence, when water no longer filters through the cloth, this matter, now become of a thicker consistence, is put into chests, where it entirely loses its moisture. At the end of three months the indigo is fit for sale.

It is used, in washing, to give a bluish colour to linen: painters also employ it in their water-colours; and dyers cannot make fine blue without indigo. The ancients procured it from the East-Indies; in modern times, it has been transplanted into America. The cultivation of it, successively attempted at different places, appears to be fixed at Carolina, St Domingo, and Mexico. That which is known under the name of *Guatemala indigo*, from whence it comes, is the most perfect of all.

There are two kinds of indigo prepared in the East-Indies, particularly on the coast of Coromandel, at Pondichery, &c. Of these the worst kind is used for giving the body of colour to the dyed substance, the other being employed only to give it a gloss afterwards. The finest is prepared on the coast of Agra, Masulipatam, and Ayanoo, but especially in the island of Java; but this last, being extremely dear, is very little used by the dyers. The best ought to float on the surface of water; its colour ought to be a very dark blue inclining to violet, bright and sparkling, especially when broken. It may be tried by dissolving a little in a glass of water: if pure, it will mix equably with the liquor; but if otherwise, will separate and fall to the bottom. Another method of trying the goodness of this substance is by fire; for the pure indigo will be entirely consumed, while the extraneous particles will remain. The pounded indigo is much more subject to adulteration than such as is sold in cakes or tablets; as the ashes or dirt with which it is mixed are very apt to separate from the pure colouring substance when standing in a liquid state, as it must always do before the moisture is evaporated: whence, on breaking a bit of indigo so adul-

terated, the extraneous matter will be perceived in strata of a different colour.

INDIVIDUAL, a particular being of any species, or that which cannot be divided into two or more beings equal or alike.

The usual division in logic is made into *genera*, or into *genuses*; those *genera* into *species*; and those *species* into *individuals*.

INDIVISIBLE, among metaphysicians.—A thing is said to be absolutely *indivisible*, that is a simple being, and consists of no parts into which it may be divided. Thus, God is *indivisible* in all respects; as is also the human mind; not having extension, or other properties of body.

INDIVISIBLES, in geometry, the elements or principles into which any body or figure may be ultimately resolved; which elements are supposed to be infinitely small: thus, a line may be said to consist of points, a surface of parallel lines, and a solid of parallel and similar surfaces.

INDORSEMENT, in law, any thing written on the back of a deed; as a receipt for money received.

There is likewise an *indorsement*, by way of assignment, on bills of exchange and notes of hand; which is done by writing a person's name on the back thereof.

INDOSTAN, or **HINDOSTAN**, PROPER INDIA, or *the Empire of the Great Mogul*. See **HINDOSTAN**.

INDUCTION, in logic and rhetoric, a consequence drawn from several propositions or principles first laid down. See **LOGIC**; and **ORATORY**, n° 32.

INDUCTION, in law, is putting a clerk or clergyman in possession of a benefice or living to which he is collated or presented. See the article **PARSON**.—Induction is performed by a mandate from the bishop to the arch-deacon, who usually issues out a precept to other clergymen to perform it for him. It is done by giving the clerk corporal possession of the church, as by holding the ring of the door, tolling a bell, or the like; and is a form required by law, with intent to give all the parishioners due notice and sufficient certainty of their new minister, to whom their tithes are to be paid. This therefore is the investiture of the temporal part of the benefice, as institution is of the spiritual. And when a clerk is thus presented, instituted, and inducted into a rectory, he is then, and not before, in full and complete possession; and is called in law *persona impersonata*, or *parson impersonatus*.

INDULGENCES, in the Romish church, are a remission of the punishment due to sins, granted by the church, and supposed to save the sinner from Purgatory.

According to the doctrine of the Romish church, all the good works of the saints over and above those which were necessary towards their own justification, are deposited, together with the infinite merits of Jesus Christ, in one inexhaustible treasury. The keys of this were committed to St Peter, and to his successors the popes, who may open it at pleasure, and by transferring a portion of this superabundant merit to any particular person, for a sum of money, may convey to him either the pardon of his own sins, or a release for any one in whom he is interested, from the pains of Purgatory. Such indulgences were first invented

Indulgen-
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in the 11th century, by Urban II. as a recompence for those who went in person upon the glorious enterprise of conquering the Holy Land. They were afterwards granted to those who hired a soldier for that purpose; and in process of time were bestowed on such as gave money for accomplishing any pious work enjoined by the Pope.

The power of granting indulgences has been greatly abused in the church of Rome. Pope Leo X. in order to carry on the magnificent structure of St Peter's at Rome, published indulgences, and a plenary remission, to all such as should contribute money towards it. Finding the project take, he granted to Albert elector of Mentz, and archbishop of Magdeburg, the benefit of the indulgences of Saxony and the neighbouring parts, and farmed out those of other countries to the highest bidders; who, to make the best of their bargain, procured the ablest preachers to cry up the value of the ware. The form of these indulgences was as follows: "May our Lord Jesus Christ have mercy upon thee, and absolve thee by the merits of his most holy passion. And I, by his authority, that of his blessed apostles Peter and Paul, and of the most holy Pope, granted and committed to me in these parts, do absolve thee, first from all ecclesiastical censures, in whatever manner they have been incurred; then from all thy sins, transgressions, and excesses, how enormous soever they may be, even from such as are reserved for the cognizance of the holy see, and as far as the keys of the holy church extend: I remit to you all punishment which you deserve in Purgatory on their account; and I restore you to the holy sacraments of the church, to the unity of the faithful, and to that innocence and purity which you possessed at baptism; so that when you die, the gates of punishment shall be shut, and the gates of the paradise of delight shall be opened: and if you shall not die at present, this grace shall remain in full force when you are at the point of death. In the name of the Father, and of the Son, and of the Holy Ghost."

The terms in which the retailers of indulgences described their benefits and the necessity of purchasing them, are so extravagant, that they appear almost incredible. If any man (said they) purchases letters of indulgence, his soul may rest secure with respect to its salvation. The souls confined in Purgatory, for whose redemption indulgences are purchased, as soon as the money tinkles in the chest, instantly escape from that place of torment, and ascend into heaven. That the efficacy of indulgences was so great, that the most heinous sins, even if one should violate (which was impossible) the mother of God, would be remitted and expiated by them, and the person be freed both from punishment and guilt. That this was the unspeakable gift of God, in order to reconcile men to himself. That the cross erected by the preachers of indulgences was equally efficacious with the cross of Christ itself. "Lo! the heavens are open; if you enter not now, when will you enter? For twelve pence you may redeem the soul of your father out of Purgatory; and are you so ungrateful, that you will not rescue your parent from torment? If you had but one coat, you ought to strip yourself instantly, and sell it, in order to purchase such benefits," &c.

It was this great abuse of indulgences that contri-

buted not a little to the first reformation of religion in Germany, where Martin Luther began first to declaim against the preachers of indulgences, and afterwards against indulgences themselves: but since that time the popes have been more sparing in the exercise of this power: however, they still carry on a great trade with them to the Indies, where they are purchased at two rials a-piece, and sometimes more.

The pope likewise grants indulgences to persons at the point of death; that is, he grants them, by a brief, power to choose what confessor they please, who is authorized thereby to absolve them from all their sins in general.

INDULT, in the church of Rome, the power of presenting to benefices granted to certain persons by the pope. Of this kind is the indult of kings and sovereign princes in the Romish communion, and that of the parliament of Paris granted by several popes. By the concordat for the abolition of the pragmatic sanction, made between Francis I. and Leo X. in 1516, the French king has the power of nominating to bishoprics, and other consistorial benefices, within his realm. At the same time, by a particular bull, the pope granted him the privilege of nominating to the churches of Brittany and Provence. In 1648 pope Alexander VIII. and in 1668 Clement IX. granted the king an indult for the bishoprics of Metz, Toul, and Verdun, which had been yielded to him by the treaty of Munster; and in 1668 the same pope Clement IX. granted him an indult for the benefices in the counties of Roussillon, Artois, and the Netherlands. The cardinals likewise have an indult granted them by agreement between pope Paul IV. and the sacred college in 1555, which is always confirmed by the popes at the time of their election. By this treaty the cardinals have the free disposal of all the benefices depending on them, and are empowered likewise to bestow a benefice *in commendam*.

INDULTO, a duty, tax, or custom, paid to the king of Spain for all such commodities as are imported from the West Indies in the galleons.

INDUS, a large river of Asia, which rises in the mountains which separate Tartary from India, and discharges itself into the Indian ocean. See HINDOSTAN and INDIA.

INEBRIANTS, are defined to be such things as affect the nerves in a particular and agreeable manner, and through them alter and disturb the functions of the mind. They are properly divided into native and artificial; the former chiefly in use among the oriental and other nations, the latter principally throughout Europe.

Natural Inebriants, are, 1. Opium; in use all over the east, and of which the Turks, through custom, swallow a drachm. 2. Peganum harmala, Syrian rue. The seeds are sold in Turkey for this purpose; and with these, as Bellonius relates, the Turkish emperor Solyman kept himself intoxicated. 3. Maſſac of the Turks, or bangué of the Persians; prepared from the dust of the male-flower of hemp, or from the leaves. 4. Bangué of the Indians, from the leaves of the hibiscus ſabdariffa. 5. Seeds of various species of the datura, or thorny apple. 6. Pinang, or betel of the Indians. 7. Roots of black henbane. 8. The hyoscyamus physaloides. 9. Berries of the deadly nightshade. 10. Leaves of millfoil,

Indult
||
Inebriants.

Robertson's
Charles V
vol. ii. 89.

Inertia
||
Infancy.

millfoil, are used by the Dalekarians to render their beer intoxicating. 11. Tobacco, and several others less material are mentioned; such as clary, saffron, and darnel.

Artificial Inebriants, are fermented liquors from farinaceous seeds; wines, and spirits drawn by distillation. With these is ranked the nectar of the gods, and the anodyne medicine of Homer, commonly called *nepenthe*; and the spells by which Medea and Circe produced their enchantments.

INERTIA of MATTER, in philosophy, is defined by Sir Isaac Newton to be a passive principle by which bodies persist in their motion or rest, receive motion in proportion to the force impressing it, and resist as much as they are resisted. It is also defined by the same author to be a power implanted in all matter, whereby it resists any change endeavoured to be made in its state. See **MECHANICS**.

INESSE is applied to things which are actually existing.

Authors make a difference between a thing *in esse*, and a thing *in posse*: a thing that is not, but may be, they say is *in posse*, or *potentia*; but a thing apparent and visible, they say is *in esse*, that is, has a real being *co instanti*; whereas the other is casual, and at best but a possibility.

INFALISTACIO, an ancient punishment of felons, by throwing them among the rocks and sands, customarily used in port-towns. It is the opinion of some writers, that *infalifatus* did imply some capital punishment, by exposing the malefactor upon the sands till the next tide carried him away; of which custom, it is said, there is an old tradition. However the penalty seems to take its name from the Norman *falese*, or *falefia*, which signified not the sands, but the rocks and cliffs adjoining, or impending on the sea-shore. *Commisit feloniam ob quam fuit suspensus, ulegatus, vel alio modo morti damnatus, &c. vel apud Dover infalifatus, apud Southampton submersus, &c.*

INFALLIBLE, something that cannot err, or be deceived.

One of the great controversies between the Protestants and Papists, is the infallibility which the latter attribute to the pope; though, in fact, they themselves are not agreed on that head, some placing this pretended infallibility in the pope and a general council.

INFAMY, in law, is a term which extends to forgery, perjury, gross cheats, &c. by which a person is rendered incapable of being a witness or juror, even though he is pardoned for his crimes.

INFANCY, the first part of life.—Fred. Hoffman says, that the human species are *infants* until they begin to talk, and *children* to the age of puberty.—Anatomy discovers to us, that during infancy there is much imperfection on the human frame; e. g. its parts are disproportioned, and its organs incapable of those functions which in future life they are designed to perform. The head is larger in proportion to the bulk of the body than that of an adult. The liver and pancreas are much larger in proportion than in advanced life; their secretions are more in quantity also. The bile is very inert; the heart is stronger and larger than in future life; the quantity of blood sent through the heart of an infant, in a given time, is also more in proportion than in adults. Though these circum-

stances have their important usefulness, yet the imperfection attending them subjects this age to many injuries and dangers from which a more perfect state is exempted. Dr Percival observes, in his *Essays Med. and Exp.* that of all the children who are born alive, two thirds do not live to be two years old.

Infants have a larger proportion of brain than adults, hence are most subject to nervous disorders; and hence the diagnostics of diseases are in many respects obscure or uncertain, as particularly those taken from the pulse, which, from the irritability of the tender bodies of infants, is suddenly affected by a variety of accidents too numerous, and, seemingly too trivial to gain our attention. However, no very great embarrassment arises to the practitioner from hence; for the disorders in this state are generally acute, less complicated than those in adults, and are more easily discovered than is generally apprehended.

INFANT, denotes a young child. See **INFANCY**.

INFANTS, amongst the Jews, Greeks, and Romans, were swaddled as soon as they were born, in a manner similar to that practised by the moderns. The Jews circumcised and named their infant children on the 8th day from the birth. Upon the birth of a son, the Grecians crowned their doors with olive—of a daughter, with wool. The infant was washed in warm water, and anointed with oil—by the Spartans with wine; it was then dressed, and laid in a basket, or on a shield if the father was a warrior, particularly amongst the Spartans. At five days old they ran with it round the fire, and the mother's relations sent presents. The Greeks named their children on the tenth day, the Romans on the ninth: The naming was attended with sacrifices and other demonstrations of joy. The maternal office of suckling their own children was never declined, when circumstances would permit. How much different is this from the unnatural delicacy observed by modern mothers, a delicacy which to the child is cruelty! The 40th day was a day of solemnity for the mother. The names of children were registered both by the Greeks and Romans. See **REGISTER**.

For an account of the custom of exposing infants, see **EXPOSING**.

Infants were kept from crying in the streets by means of a sponge soaked in honey. Nurses had also their bugbears and terrible names to frighten the children into peace:—The figure with which they were principally intimidated was *Μορμουριου*, a sort of raw-head and bloody bones.

INFANT, in law, is a person under 21 years of age; whose capacities, incapacities, and privileges, are various.

1. In *criminal matters*. The law of England does in some cases privilege an infant under the age of 21, as to common misdemeanours; so as to escape fine, imprisonment, and the like: and particularly in the cases of omission, as not repairing a bridge, or a highway, and other similar offences; for, not having the command of his fortune till the age of 21, he wants the capacity to do those things which the law requires. But where there is any notorious breach of the peace, a riot, battery, or the like, (which infants when full-grown are at least as liable as others to commit); for those, an infant above the age of 14 is equally liable to suffer, as a person of the full age of 21.

Infant.

Blackf.
Comments

With

Infant.

With regard to capital crimes, the law is still more minute and circumspect; distinguishing with greater nicety the several degrees of age and discretion. By the ancient Saxon law, the age of twelve years was established for the age of possible discretion, when first the understanding might open; and from thence till the offender was 14, it was *ætas pubertati proxima*, in which he might, or might not, be guilty of a crime, according to his natural capacity or incapacity. This was the dubious stage of discretion: but, under twelve, it was held, that he could not be guilty in will, neither after fourteen could be supposed innocent, of any capital crime which he in fact committed. But by the law, as it now stands, and has stood at least ever since the time of Edward III. the capacity of doing ill, or contracting guilt, is not so much measured by years and days, as by the strength of the delinquent's understanding and judgment. For one lad of 11 years old may have as much cunning as another of 14; and in these cases our maxim is, that *malitia supplet ætatem*. Under seven years of age, indeed, an infant cannot be guilty of felony; for then a felonious discretion is almost an impossibility in nature: but at eight years old, he may be guilty of felony. Also, under 14, though an infant shall be *prima facie* adjudged to be *doli in capax*, yet if it appear to the court and jury that he was *doli capax*, and could discern between good and evil, he may be convicted and suffer death. Thus a girl of 13 has been burnt for killing her mistress: and one boy of ten, and another of nine years old, who had killed their companions, have been sentenced to death, and he of ten years actually hanged; because it appeared upon their trials, that the one hid himself, and the other hid the body he had killed; which hiding manifested a consciousness of guilt, and a discretion to discern between good and evil. And there was an instance in the last century, where a boy of eight years old was tried at Abington for firing two barns; and, it appearing that he had malice, revenge, and cunning, he was found guilty, condemned, and hanged accordingly. Thus also, in very modern times, a boy of ten years old was convicted on his own confession of murdering his bedfellow; there appearing in his whole behaviour plain tokens of a mischievous disposition; and, as the sparing this boy merely on account of his tender years might be of dangerous consequence to the public, by propagating a notion that children might commit such atrocious crimes with impunity, it was unanimously agreed by all the judges, that he was a proper subject of capital punishment. But, in such cases, the evidence of that malice, which is to supply age, ought to be strong and clear beyond all doubt and contradiction.

2. In civil matters. The ages of male and female are different for different purposes. A male at 12 years old may take the oath of allegiance; at 14 is at the years of discretion, and therefore may consent or disagree to marriage, may choose his guardian, and, if his discretion be actually proved, may make his testament of his personal estate; at 17 may be an executor; and at 21 is at his own disposal, and may alienate his lands, goods, and chattels. A female also at seven years of age may be betrothed or given in marriage; at nine is intitled to dower; at 12 is at years of maturity, and therefore may consent or disagree to marriage, and, if proved

to have sufficient discretion, may bequeath her personal estate; at 14 is at years of legal discretion, and may choose a guardian; at 17 may be executrix; and at 21 may dispose of herself and her lands. So that full age in male or female is 21 years, which age is completed on the day preceding the anniversary of a person's birth; who till that time is an infant, and so styled in law. Among the ancient Greeks and Romans, women were never of age, but subject to perpetual guardianship, unless when married, *nisi convenissent in manum viri*: and, when that perpetual tutelage wore away in process of time, we find that, in females as well as males, full age was not till 25 years. Thus by the constitution of different kingdoms, this period, which is merely arbitrary, and *juris positivi*, is fixed at different times. Scotland agrees with England in this point; (both probably copying from the old Saxon constitutions on the continent, which extended the age of minority *ad annum vigesimum primum, et eo usque juvenes sub tutelam reponunt*): but in Naples persons are of full age at 18; in France, with regard to marriage, not till 30; and in Holland at 25.

The very disabilities of infants are privileges; in order to secure them from hurting themselves by their own improvident acts. An infant cannot be sued but under the protection, and joining the name, of his guardian; for he is to defend him against all attacks as well by law as otherwise: but he may sue either by his guardian, or *prochein amy*, his next friend who is not his guardian. This *prochein amy* may be any person who will undertake the infant's cause; and it frequently happens, that an infant, by his *prochein amy*, institutes a suit in equity against a fraudulent guardian.

With regard to estates and civil property, an infant hath many privileges. In general, an infant shall lose nothing by nonclaim, or neglect of demanding his right; nor shall any other laches or negligence be imputed to an infant, except in some very particular cases.

It is generally true, that an infant can neither alienate his lands, nor do any legal act, nor make a deed, nor indeed any manner of contract, that will bind him. But still to all these rules there are some exceptions: part of which were just now mentioned in reckoning up the different capacities which they assume at different ages: and there are others, a few of which it may not be improper to recite, as a general specimen of the whole. And, first, it is true, that infants cannot alienate their estates; but infant-trustees, or mortgagees, are enabled to convey, under the direction of the court of chancery or exchequer, or other courts of equity, the estates they hold in trust or mortgage, to such person as the court shall appoint. Also it is generally true, that an infant can do no legal act: yet an infant, who has an advowson, may present to the benefice when it becomes void. For the law in this case dispenses with one rule, in order to maintain others of far greater consequence: it permits an infant to present a clerk (who, if unfit, may be rejected by the bishop), rather than either suffer the church to be unserved till he comes of age, or permit the infant to be debarred of his right by lapse to the bishop. An infant may also purchase lands, but his purchase is incomplete; for, when he comes to age, he may either agree or disagree to it, as he thinks prudent or proper, without alleging any

Infant.

Infante
||
Infatuare.

any reason; and so may his heirs after him, if he dies without having completed his agreement. It is, farther, generally true, that an infant, under 21, can make no deed but what is afterwards voidable: yet in some cases he may bind himself apprentice by deed indented or indentures, for seven years; and he may by deed or will appoint a guardian to his children, if he has any. Lastly, it is generally true, that an infant can make no other contract that will bind him: yet he may bind himself to pay for his necessary meat, drink, apparel, physic, and such other necessities; and likewise for his good teaching and instruction, whereby he may profit himself afterwards.

INFANTE, and INFANTA, all the sons and daughters of the kings of Spain and Portugal, except the eldest; the princes being called *infantes*, and the princesses *infantas*.

INFANTRY, in military affairs, the whole body of foot-soldiers, whether independent companies or regiments.—The word takes its origin from one of the *infantas* of Spain, who, finding that the army commanded by the king her father had been defeated by the Moors, assembled a body of foot-soldiers, and with them engaged and totally routed the enemy. In memory of this event, and to distinguish the foot-soldiers, who were not before held in much consideration, they received the name of *infantry*.

Heavy-armed INFANTRY, among the ancients, were such as wore a complete suit of armour, and engaged with broad shields and long spears. They were the flower and strength of the Grecian armies, and had the highest rank of military honour.

Light-Armed INFANTRY, among the ancients, were designed for skirmishes, and for fighting at a distance. Their weapons were arrows, darts, or slings.

Light INFANTRY, among the moderns, have only been in use since the year 1656. They have no camp-equipage to carry, and their arms and accoutrements are much lighter than those of the infantry. Light infantry are the eyes of a general, and the givers of sleep and safety to an army. Wherever there is found light cavalry, there should be light infantry. They should be accustomed to the pace of four miles an hour, as their usual marching pace, and to be able to march at five miles an hour upon all particular occasions. Most of the powers on the continent have light infantry. It is only of late years that light infantry came to be used in the British army: But now every regiment has a company of light infantry, whose station is on the left of the regiment, the right being occupied by the grenadiers.

INFATUATE, to prepossess any one in favour of some person or thing that does not deserve it, so far as that he cannot easily be disabused.—The word *infatuare* comes from the Latin *fatuus* "fool;" of *fari*, "to speak out," which is borrowed from the Greek *φαρμακ*, whence *φαρμακ*, which signifies the same with *vates* in Latin, or *prophet* in English; and the reason is, because their prophets or priests used to be seized with a kind of madness or folly, when they began to make their predictions, or deliver oracles.

The Romans called those persons *infatuati*, who fancied they had seen visions, or imagined the god Faunus, whom they called *Fatuus*, had appeared to them.

INFECTION, among physicians. See CONTRA-
GION.

INFETMENT, in Scots law, the solemnity of the delivery of an heritable subject to the purchaser.

INFERIÆ, sacrifices offered by the Romans to the *Dii Manes*, or the souls of deceased heroes or other illustrious persons, or even any relation or person whose memory was held in veneration. These sacrifices consisted of honey, water, wine, milk, the blood of victims, variety of balsamic unguents, chaplets, and loose flowers. The victims upon these occasions were generally of the smaller cattle, though in ancient times they sacrificed slaves or captives: But what a shocking view does this give us of their sentiments of human nature, as if nothing but murder, cruelty, and human blood, could satisfy or prove acceptable to an human soul! The sacrifices were usually black and barren. The altars on which they were offered were holes dug in the ground.

The honey, water, wine, &c. were used as libations, and were poured on the tombs of children by children, on those of virgins by virgins, and on those of married men by women. The *inferiæ* were offered on the 9th and 30th days after interment amongst the Greeks, and repeated in the month Anthesterion. The whole of this article applies equally to the Greeks and the Romans.

INFIBULATION, in antiquity. It was a custom among the Romans to infibulate their singing boys, in order to preserve their voices: for this operation, which prevented their retracting the prepuce over the glans, and is the very reverse to circumcision, kept them from injuring their voices by premature and preposterous venery: serving as a kind of padlock, if not to their inclinations, at least to their abilities. It appears by some passages in Martial, that a less decent use was made of infibulation among the luxurious Romans: for some ladies of distinction, it seems, took this method of confining their paramours to their own embraces. Juvenal also hints at some such practice. Celsus, a chaste author, says infibulation was sometimes practised for the sake of health, and that nothing destroys it more than the silly practice this operation seems intended to prevent. This practice is not perhaps likely to be revived; if, however, any one who has suffered in his constitution by preposterous venery, should be able to get children, and should be inclined to prevent the same misfortune in them by infibulation, the method of doing it is thus: The skin which is above the glans is to be extended, and marked on both sides with ink, where it is perforated, and then suffered to retract itself. If the marks recur upon the glans, too much of the skin has been taken up, and we must make the marks farther; if the glans remain free from them, they show the proper place for affixing a fibula: then pass a needle and thread through the skin where the marks are, and tie the threads together; taking care to move it every day, until the parts about the perforations are cicatrised: this being effected, take out the thread, and put in the fibula; which the lighter it is the better.

Authors have not determined what the fibula of the ancient surgeon was, though no doubt it was for different purposes. In the present case, the fibula seems

Infection
||
Infibulation.

Infidel,
Infidelity.

seems to mean a ring of metal, not unlike what the country people put through the noses of swine.

INFIDEL, a term applied to such persons as are not baptized, and that do not believe the truths of the Christian religion. See DEIST.

INFIDELITY, in a general sense, denotes want of faith or belief in regard to any subject or transaction.

Religious INFIDELITY signifies a disbelief of Christianity.

• Knox's
Essays,
n^o 16.

Of all the methods (says an elegant modern Essayist *) which the vanity of man has devised with a view to acquire distinction, there is none easier than that of professing a disbelief of the established religion. That which shocks the feelings of those with whom we converse, cannot fail of attracting notice; and as the vain are usually confident, they utter their doubts with an air so oracular and decisive, as induces the simple to think them profoundly wise. Audacity, with little ingenuity, will attract the eyes of spectators, and this will sufficiently answer the purpose of many among the professed unbelievers. One might be diverted, if one were not hurt, at seeing a circle of silly admirers, gaping and fixing their eyes on some half-learned and impudent prater, who throws out oblique insinuations against the Bible, the clergy, or the sacrament. These are fertile topics of wit and ingenuity; but it might mortify the vanity of some very vain writers and talkers, if they were to recollect, what is undoubtedly true, that it is a species of wit and ingenuity which not only the vilest, but the most stupid and illiterate of mankind, have frequently displayed in all its possible perfection.

There is indeed no doubt, but that vanity is one of the principal causes of infidelity. It must be the sole cause of communicating it to others, by writing or conversation. For let us suppose the case of a very humane, judicious, and learned man, entertaining doubts of the truth of Christianity: if he cannot clear his doubts by examination, he will yet recollect that doubts are no certainties; and, before he endeavours to propagate his scepticism, he will ask himself these questions: "Am I quite convinced that what I doubt of cannot possibly be true? If I am convinced of it, am I sure that the publication of my opinions will not do more harm than good? Is not the disturbing of any long-established civil constitution attended with confusion, rebellion, bloodshed, and ruin? And are not the majority of men more strongly attached to the religion than the government of their forefathers? Will it serve my country to introduce discontent of any species? May not those innovations in religion, which discontent may introduce, lead to all the evils which are caused by frenzy and fanaticism? Granting that I were able to make a party formidable enough to crush opposition and to exterminate Christianity, still am I certain that I act, in this instance, like a good member of society? For is not this system, whether well or ill founded, friendly to society? I must confess it; its greatest enemies have acknowledged it. What motive then can induce me to divulge my doubts of its authenticity? Not the good of mankind; for it is already allowed by unbelievers, that the good of mankind is interested in the belief of its divine original. Is it for my own good, and with a view to be convinced? I will not deceive myself: my motive, I suspect, is of

another kind; for do I read those books which have been already written to satisfy similar doubts? Nothing but the vanity of appearing to be wiser than my credulous neighbours can induce me to interrupt the happiness of their belief. But vanity of this sort, which tends to disturb society, to injure the national morals, and to rob many thousand individuals of a copious source of sweet and solid comfort, must be pronounced extreme wickedness, even according to the obvious dictates of natural religion. I shall act the part of a good citizen and a good man, by conforming to a system whose beneficial influence I feel and confess, and by endeavouring to acquire a belief in that which has for so many centuries been established, and which promises to soothe me in distress with the sweetest consolations, and to brighten the dismal hour of death, by the hope of a more glorious and happy state of existence. At all events, I shall have the satisfaction of having commanded myself so far, as not to have run the hazard of endangering the welfare of my fellow-creatures, either here or hereafter, by indulging a degree of vanity, which, in a creature so weak and so short-lived as myself, is a folly very inconsistent with the superior wisdom which I seem to arrogate.

"I will venture to repeat (continues our author), that all writers against Christianity, however they may affect even the extremes of benevolence, honour, philosophy, and enlargement of mind, are actuated by vanity and wickedness of heart. Their motives are as mean, selfish, narrow, and in every respect unjustifiable, as the tendency of their writings is mischievous. Their malice is often impotent, through the foolish sophistry of their arguments; but, if ever it be successful, it is highly injurious: and indeed, considering their motives and the probable consequences of their endeavours, the infidel writer is a greater enemy to society, and consequently guiltier, according to all the principles of social union, than the thief or the traitor. Persecution would, however, only promote his cause, and his proper punishment is contempt.

"It is certainly no derogation from the character of a man of sense, to conform, even while he is so unfortunate as to doubt their truth, to the opinions of his country. His conformity will probably lead him to a train of actions and of thought, which, in due time, will induce him to believe. But, if that should not happen, yet he will act, as very wise and very great men have acted, in paying a respectful deference to the avowed conviction of others. The most intelligent and powerful men of ancient Rome, not only appeared to believe a very absurd and hurtful system, but assisted in all its ceremonies as priests. Even Socrates, who evidently entertained some notions adequate to the dignity of the one great and supreme Being, yet thought it was a duty which he owed to his country, so far to conform to the wretched establishment, as to order in his dying words a sacrifice to Æsculapius. This external conformity to the national religion ought not to be confounded with hypocrisy. If indeed it is carried to extremes, or zealously affected, it certainly is very blameable and contemptible deceit; but while it keeps within the bounds of reason and moderation, it ought to be called a decent deference to the opinions of the majority; arising from humility, and from a desire to

Infidelity.

Infidelity. maintain the tranquillity of the state, and to continue an innocent and useful system, which has and will always greatly contribute to lessen the quantity and degree both of moral and of natural evil.

"The easiest, after all, or at least the most effectual method of appearing in any character, is really to be what we wish to appear. But belief, you will say, is not in our power, and how can we believe what appears to us incredible? Certainly you cannot while it appears incredible. But let me ask you, whether you have taken any pains to believe, or have at once and at a glance persuaded yourself, that the Christian religion is totally false? It is probable that a great number of sceptical writers never gave themselves the trouble to read those scriptures which they warmly oppose. They hear objections, they read objections, and they find, that from men of reputed wit and ingenuity the objections often originate. They also wish to be reputed men of wit and ingenuity, and therefore eagerly adopt the language and sentiments of the order. Perhaps the vanity and pride of this class of men will render all attempts to convince them abortive; but to modest doubters, and to those whose good sense and good dispositions lead them to wish to adopt the religion of their country, it may not be useless to suggest advice, with a view to facilitate their conviction.

"The chief thing required is to free themselves from the pride of human reason. Humility (and surely our blindness and imperfections are sufficient to render us humble, if we would be reasonable), humility will open our hearts, and belief will find admission. Sincere endeavours, seconded by prayers, will never fail to help our unbelief. But, alas! a fine, gay, spirited, liberal, and enlarged modern philosopher, would be ashamed to be found on his knees, or with a Testament in his possession. There is scarcely any vicious act, or any vicious book, which would put him so much to the blush.

"A modest well-meaning man might, however, one should think, divest himself of those prejudices which prevent the possibility of belief, by the following soliloquy: 'I find myself placed in a world abounding with evil and misery. Under the immediate pressure of it, I feel my heart inclining, like the needle to the north, by its natural tendency, to the Deity for support. Man, of all animals, is the only one who has the sense of religion. Feeling this distinctive propensity of my nature, I look around to discover to what object, and in what manner, that part of my fellow creatures, who live in the same society with myself, pay their adoration. I find a system of religion already established, and which has been established in the most enlightened countries of the earth near 2000 years. I resolve to examine it. It claims that respect from its antiquity and universality. Many difficulties appear on the first inspection. My reason is often startled, and my belief wavers. But I will not yet give up a point of so serious importance, without further and closer attention to it. I reflect, that 2000 years is a vast space in the age of the world. How many myriads of men like myself have lived and died in the faith during that time! And were all of them fools or hypocrites? It could not have been. Can the understanding of a poor individual, just come into the world, and

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hardly knowing where he is, comprehend on intuition an object of such magnitude, and make the mighty discovery which has escaped millions of the wisest and most learned of mortals? Or, supposing that they all perceived the deception, am I then at last the only honest man who will confess it? I am ashamed to avow such an idea to myself. But yet, if I reject what they received, surely I avow it in the more expressive language of my conduct. Pride, I fear, is the foundation of my scepticism; and humility must form the basis of my belief. I will check my own presumption, and reject the cavils of vain and foolish philosophy. Shall a poor weak creature, who cometh up like a flower, and is cut down, who fleeth as a shadow, and never continueth in one stay, presume to pronounce decisively in that little period, in which he has scarcely time to look about him before he dies, against a system which has strong internal and external evidence of divine original, which is most useful and comfortable, and which has been admitted among a great portion of mankind during almost 20 centuries? No, it is the first wisdom to be humble. Humility will be followed by grace, and grace by faith, and faith by salvation. It plainly appears, that I can lose nothing by belief, but some of those excessive and irregular enjoyments, which would destroy my health and life; but I may possibly gain a glory and a happiness which shall continue to all eternity."

INFINITE, that which has neither beginning nor end: in which sense God alone is infinite.

Infinite is also used to signify that which has had a beginning, but will have no end, as angels and human souls. This makes what the schoolmen call *infinitum a parte post*; as, on the contrary, by *infinitum a parte ante*, they mean that which has an end, but had no beginning.

INFINITE Quantities. The very idea of magnitudes infinitely great, or such as exceed any assignable quantities, does include a negation of limits; yet if we nearly examine this notion, we shall find that such magnitudes are not equal among themselves, but that there are really, besides infinite length and infinite area, three several sorts of infinite solidity; all of which are *quantitates sui generis*, and that those of each species are in given proportions.

Infinite length, or a line infinitely long, is to be considered either as beginning at a point, and so infinitely extended one way, or else both ways from the same point; in which case the one, which is a beginning infinity, is the one half of the whole, which is the sum of the beginning and ceasing infinity; or, as may be said, of infinity *a parte ante* and *a parte post*, which is analogous to eternity in time and duration, in which there is always as much to follow as is past, from any point or moment of time; nor doth the addition or subduction of finite length, or space of time, alter the case either in infinity or eternity, since both the one or the other cannot be any part of the whole.

INFINITESIMALS, among mathematicians, are defined to be infinitely small quantities.

In the method of infinitesimals, the element, by which any quantity increases or decreases, is supposed to be infinitely small; and is generally expressed by two or more terms, some of which are infinitely less than the rest; which being neglected as of no importance, the re-

Infinite, Infinitesimals.

Infinitive
||
Influence.

Informa-
tion,
Informer.

remaining terms form what is called the *difference of the proposed quantity*. The terms that are neglected in this manner, as infinitely less than the other terms of the element, are the very same which arise in consequence of the acceleration, or retardation, of the generating motion, during the infinitely small time in which the element is generated; so that the remaining terms express the elements that would have been produced in that time, if the generating motion had continued uniform: therefore those differences are accurately in the same ratio to each other as the generating motions or fluxions. And hence, though in this method infinitesimal parts of the elements are neglected, the conclusions are accurately true without even an infinitely small error, and agree precisely with those that are deduced by the method by fluxions. See FLUXIONS.

INFINITIVE, in grammar, the name of one of the moods, which serve for the conjugating of verbs. See GRAMMAR.

INFINITY, the quality which denominates a thing infinite. See METAPHYSICS.

INFIRMARY, a kind of hospital, where the weak and sickly are properly taken care of.

INFLAMMABILITY, that property of bodies which disposes them to kindle or catch fire. See FIRE, FLAME, PHLOGISTON, &c.

INFLAMMATION, in medicine and surgery, a redness and swelling of any part of the body, attended with heat, pain, and symptoms of fever. See (the *Index* subjoined to) MEDICINE.

INFLAMMATION of Oils by concentrated Acids. See CHEMISTRY, n° 778.

INFLATION, formed from *in* and *flatus*; of *fla*, "I blow;" blowing up, the act of stretching or filling any flaccid or distensible body with a statulent or windy substance.

INFLECTED RAYS. See *Inflected Rays*.

INFLECTION, called also a *diffraction*, and *deflection*, in optics, is a property of light, by reason of which, when it comes within a certain distance of any body, it will either be bent from it, or towards it; which is a kind of imperfect reflection or refraction. See OPTICS.

INFLECTION, or *Point of Inflection*, in the higher geometry, is a point where a curve begins to bend a contrary way.

INFLECTION, in grammar, the variation of nouns and verbs, by declension and conjugation.

INFLUENCE, a quality supposed to flow from the heavenly bodies, either with their light or heat; to which astrologers idly ascribe all sublunary events.

Alchemists also, who to this ascribe the philosophers' Stone, tell us, that every thing in nature is produced by the influence of the stars, which, in their passage through the atmosphere, imbibe many of its moist parts, the grossest whereof they deposit in the sands and earths where they fall; that these, filtrating through the pores of the earth, descend even to the centre, whence they are driven, by the central fire, back again to the surface; and in their ascent, by a natural kind of sublimation, as they find earths duly disposed, they form natural bodies, as metals, minerals, and vegetables, &c. Thus, it is pretended, that chemistry,

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consisting of an artificial imitation of these natural operations, and in applying active principles to passive principles, can form natural bodies, make gold, &c.

INFORMATION, in law, is nearly the same in the crown-office, as what in other courts is called a *declaration*. See PROSECUTION.

Informations are of two sorts; first, those which are partly at the suit of the king, and partly at that of a subject; and secondly, such as are only in the name of the king. The former are usually brought upon penal statutes, which inflict a penalty upon conviction of the offender, one part to the use of the king, and another to the use of the informer. By the statute 31 Eliz. c. 5. no prosecution upon any penal statute, the suit and benefit whereof are limited in part to the king and in part to the prosecutor, can be brought by any common informer after one year is expired since the commission of the offence; nor on behalf of the crown, after the lapse of two years longer; nor, where the forfeiture is originally given only to the king, can such prosecution be had after the expiration of two years from the commission of the offence.

The informations that are exhibited in the name of the king alone, are also of two kinds: first, those which are truly and properly his own suits, and filed *ex officio* by his own immediate officer, the attorney-general: secondly, those in which, though the king is the nominal prosecutor, yet it is at the relation of some private person or common informer; and they are filed by the king's coroner and attorney in the court of king's bench, usually called the *master of the crown-office*, who is for this purpose the standing officer of the public. The objects of the king's own prosecutions, filed *ex officio* by his own attorney-general, are properly such enormous misdemeanors, as peculiarly tend to disturb or endanger his government, or to molest or affront him in the regular discharge of his royal functions. For offences so high and dangerous, in the punishing or preventing of which a moment's delay would be fatal, the law has given to the crown the power of an immediate prosecution, without waiting for any previous application to any other tribunal: which power, thus necessary, not only to the ease and safety, but even to the very existence, of the executive magistrate, was originally reserved in the great plan of the English constitution, wherein provision is wisely made for the due preservation of all its parts. The objects of the other species of informations, filed by the master of the crown-office upon the complaint or relation of a private subject, are any gross and notorious misdemeanors, riots, batteries, libels, and other immoralities of an atrocious kind, not peculiarly tending to disturb the government (for those are left to the care of the attorney-general), but which, on account of their magnitude or pernicious example, deserve the most public animadversion. And when an information is filed, either thus, or by the attorney-general *ex officio*, it must be tried by a petit jury of the county where the offence arises: after which, if the defendant be found guilty, he must resort to the court for his punishment. See a history and vindication of this mode of prosecution in the work cited on the margin, vol. iv. p. 309,—312.

INFORMER, (*informator*), in law, a person that

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informs

Blackst.
Comments

Infraction informs against, or prosecutes in any of the king's courts, those that offend against any law or penal statute. See **INFORMATION**.
Ingelfheim.

Informers were very common both in Greece and Rome. Every corner of the streets was pestered with swarms of turbulent rascals, who made it their constant business to pick up stories and catch at every occasion to accuse persons of credit and reputation: These by the Greeks were called *Συκοφάνται*; for a more particular account of whom, see the article **SYCOPHANT**.

Amongst the Romans, informers were of two sorts, *mandatores* and *delatores*. These played into each other's hands; the former marking down such persons as they pretended to have found guilty of any misdemeanor, and the other prosecuting them. What tended to increase the number of these pestilent fellows was, that the informers were entitled to a fourth part of the effects of the persons convicted. Wicked princes rewarded and countenanced this mischievous tribe; but Titus set on foot a most diligent search after them, and punished such as he found with death or banishment. Trajan also is praised by Pliny for a similar conduct.

INFRACTION, (formed from *in*, and the supine of *frango*, "I break,") a rupture or violation of a treaty, law, ordinance, or the like.

INFRA LAPSARII, the name of a sect of predeterminarians, who maintain, that God has created a certain number of men only to be damned, without allowing them the means necessary to save themselves, if they would; and they are thus called, because they hold that God's decrees were formed *infra lapsum*, after his knowledge of the fall, and in consequence thereof; in contradistinction to the **SUPRALAPSARIANS**.

INFRA-SCAPULARIS, in anatomy. See **ANATOMY**, *Table of the Muscles*.

INFRA-SPINATUS, in anatomy. See **ANATOMY**, *ibid*.

INFULA, in antiquity, was a mitre worn by the Romans and Grecian priests, upon the head, from which on each side hung a ribband. The covering the head with a mitre was rather a Roman than a Grecian custom, introduced into Italy by *Æneas*, who covered his head and face at the performance of sacrifice, lest any ill-boding omen should disturb the rites. The infulæ were commonly made of wool, and were not only worn by the priests, but were put upon the horns of the victims, upon the altar and the temple. The infulæ were also called *vitta*.

INFUNDIBULIFORM, in botany, an appellation given to such monopetalous or one-leaved flowers as resemble a funnel in shape, or which have a narrow tube at one end, and gradually widen towards the limb or mouth.

INFUSION, in pharmacy, an operation whereby the virtues of plants, roots, and the like, are drawn out, by letting them steep in some convenient fluid menstruum, without boiling them therein; since boiling is found to dissipate the finer parts of many bitter and aromatic substances, without carefully extracting their medicinal principles.

INGELSHEIM, a town of Germany, in the palatinate of the Rhine, remarkable for having been the residence of the emperors; seated on the river *Salva*, on an eminence, from whence there is a charming prospect. E. Long. 8. 5. N. Lat. 49. 58.

INGENUOUS, in a general sense, signifies open, fair, and candid. **Ingenuous**.

INGENUOUS, (*ingenuus*), in Roman antiquity, an appellation given to persons born of free parents, who had never been slaves: for the children of the *liberti*, or persons who had obtained their liberty, were called *libertini*, not *ingenui*; this appellation of *ingenuus* being reserved for their children, or the third generation.

INGESTA, is used by some authors to express all sorts of aliment taken into the body.

INGLIS (Sir James), a Scottish poet who flourished towards the middle of the 16th century. According to Mackenzie, he was descended from an ancient family in Fifeshire, where he was born in the reign of James IV. He was educated at St Andrew's, went to Paris, and returned in the minority of James V. into whose favour he ingratiated himself by his poetry, having written sundry tragedies and comedies, and other poems, that were much applauded by good judges. He joined the French faction against the English; and, in some skirmishes preceding the fatal battle of Pinkie, so distinguished himself, that he was knighted on the field. After the loss of that day, he retired into Fife, and amused himself with his favourite studies; and in 1548 published at St Andrew's his noted Complaint of Scotland. This is a well-written work for the time; and shows abundance of learning. He appears from it to have read much both in Greek and Latin authors, to have been well-skilled in mathematics and philosophy, and to have been a great lover of his country. Unpublished and in MS. (says Mackenzie) are Poems, consisting of Songs, Ballads, Plays, and Farces. He died at Culrois in 1554.

INGLUVIES, the crop or craw of granivorous birds, serving for the immediate reception of the food, where it is macerated for some time before it is transmitted to the true stomach.

INGOLSTADT, a handsome town of Germany, and the strongest in Bavaria, with a famous university and a handsome church. The houses are built with stone, and the streets large. It is seated on the Danube, in E. Long. 11. 10. N. Lat. 48. 42.

INGOT, a mass of gold or silver melted down, and cast in a mould, but not coined or wrought.

INGRAFTING, in gardening. See **GRAFTING**.

INGRATITUDE, the opposite of gratitude. See **GRATITUDE**.

Ingatitude is a crime so shameful, that there never was a man found who would own himself guilty of it; and, though too frequently practised, it is so abhorred by the general voice, that to an ungrateful person is imputed the guilt or the capability of all other crimes.

The ungrateful are neither fit to serve their Maker, their country, nor their friends.

Ingatitude perverts all the measures of religion and society, by making it dangerous to be charitable and good-natured. (See **GRATITUDE**). However, it is better to expose ourselves to ingratitude than to be wanting in charity and benevolence.

Great minds, like Heav'n, are pleas'd with doing good;
 Though the ungrateful subjects of their favours
 Are barren in return.

Ingratitude.

1. In a little work intitled *Friendly Cautions to Officers*, the following atrocious instance of ingratitude is related. An opulent city in the west of England, little used to have troops with them, had a regiment sent to be quartered there: the principal inhabitants and wealthiest merchants, glad to show their hospitality and attachment to their sovereign, took the first opportunity to get acquainted with the officers, inviting them to their houses, and showing them every civility in their power. This was truly a desirable situation. A merchant, extremely easy in his circumstances, took so prodigious a liking to one officer in particular, that he gave him an apartment in his own house, and made him in a manner absolute master of it, the officer's friends being always welcome to his table. The merchant was a widower, and had only two favourite daughters; the officer in so comfortable a station cast his wanton eyes upon them; and too fatally succeeding, ruined them both. Dreadful return to the merchant's misplaced friendship! The consequence of this ungenerous action was, that all officers ever after were shunned as a public nuisance, as a pest to society: nor have the inhabitants perhaps yet conquered their aversion to a red-coat.

2. We read in Rapin's History, that during Monmouth's rebellion, in the reign of James II. a certain person knowing the humane disposition of one Mrs Gaunt, whose life was one continued exercise of beneficence, fled to her house, where he was concealed and maintained for some time. Hearing, however, of the proclamation, which promised an indemnity and reward to those who discovered such as harboured the rebels, he betrayed his benefactress; and such was the spirit of justice and equity which prevailed among the ministers, that he was pardoned and recompensed for his treachery, while she was burnt alive for her charity!

3. The following instance is also to be found in the same History.—Humphry Bannister and his father were both servants to and raised by the duke of Buckingham; who being driven to abscond, by an unfortunate accident befalling the army he had raised against the usurper Richard III. he without footman or page retired to Bannister's house near Shrewsbury, as to a place where he had all the reason in the world to expect security. Bannister, however, upon the king's proclamation promising 1000l. reward to him that should apprehend the duke, betrayed his master to John Merton high sheriff of Shropshire, who sent him under a strong guard to Salisbury, where the king then was, and there in the market-place the duke was beheaded. But Divine vengeance pursued the traitor Bannister; for demanding the 1000l. that was the price of his master's blood, King Richard refused to pay it him, saying, "He that would be false to so good a master, ought not to be encouraged." He was afterwards hanged for manslaughter, his eldest son run mad and died in a hog-sty, his second became deformed and lame, and his third son was drowned in a small puddle of water. His eldest daughter was got with child by one of his carters, and his second was seized with a leprosy whereof she died.—*Hist. of Eng.* 8vo. vol. 1. p. 304.

The following barbarous instances are from ancient History.

4. When Xerxes king of Persia was at Celene, a city of Phrygia, Pythius, a Lydian, who had his residence in that city, and next to Xerxes was the most opulent prince of those times, entertained him and his whole army with an incredible magnificence, and made him an offer of all his wealth towards defraying the expences of his expedition. Xerxes, surprised and charmed at so generous an offer, had the curiosity to inquire to what a sum his riches amounted. Pythius made answer, that having the design of offering them to his service, he had taken an exact account of them, and that the silver he had by him amounted to 2000 talents (about 255,000l. Sterling), and the gold to 4,000,000 of daries (about 1,700,000l. Sterling), wanting 7000. All this money he offered him, telling him, that his revenue was sufficient for the support of his household. Xerxes made him very hearty acknowledgments, and entered into a particular friendship with him, but declined accepting his present. The same prince who had made such obliging offers to Xerxes, having desired a favour of him some time after, that out of his five sons who served in his army, he would be pleased to leave him the eldest, in order to be a comfort to him in his old age: the king was so enraged at the proposal, though so reasonable in itself, that he caused the eldest son to be killed before the eyes of his father, giving the latter to understand, that it was a favour he spared him and the rest of his children. Yet this is the same Xerxes who is so much admired for his humane reflection at the head of his numerous army, "That of so many thousand men, in 100 years time there would not be one remaining; on which account he could not forbear weeping at the uncertainty and instability of human things." He might have found another subject of reflection, which would have more justly merited his tears and affliction, had he turned his thoughts upon himself, and considered the reproaches he deserved for being the instrument of hastening the fatal term to millions of people, whom his cruel ambition was going to sacrifice in an unjust and unnecessary war.

5. Basilus Macedo the emperor, exercising himself in hunting, a sport he took great delight in, a great stag running furiously against him, fastened one of the branches of his horns in the emperor's girdle, and pulling him from his horse, dragged him a good distance, to the imminent danger of his life; which a gentleman of his retinue perceiving, drew his sword and cut the emperor's girdle asunder, which disengaged him from the beast, with little or no hurt to his person. But observe what reward he had for his pains: "He was sentenced to lose his head for putting his sword so near the body of the emperor;" and suffered death accordingly.

INGRESS, in astronomy, signifies the sun's entering the first scruple of one of the four cardinal signs, especially Aries.

INGRIA, a province of the Russian empire, lying on the gulf of Finland, being about 130 miles in length, and 50 in breadth. It abounds in game and fish; and here are a great number of elks, which come in troops from Finland in the spring and autumn. It was conquered by the Czar Peter the Great, and Peterburgh is the capital town. It is bounded by the river Nieva, and the gulf of Finland, on the north;

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by

Ingrosser by Great Novogorod, on the east and south; and by Livonia, on the west.

Ingrosser, or **ENGROSSER**, in common law, is one who buys up corn growing, or any provisions by wholesale, before the market, to sell again. See **FOASTALLING**.

It also signifies a clerk who writes records or instruments of law on skins of parchment. See **ENGROSSING**.

INGUEN, in anatomy, the same with what is otherwise called *groin*.

INGULPHUS, abbot of Croyland, and author of the history of that abbey, was born in London about A. D. 1030. He received the first part of his education at Westminster; and when he visited his father, who belonged to the court of Edward the Confessor, he was so fortunate as to engage the attention of queen Edgitha. That amiable and learned princess took a pleasure in examining our young scholar on his progress in grammar, and in disputing with him in logic; nor did she ever dismiss him without some present as a mark of her approbation. From Westminster he went to Oxford, where he applied to the study of rhetoric, and of the Aristotelian philosophy, in which he made greater proficiency than many of his contemporaries. When he was about 21 years of age, he was introduced to William duke of Normandy (who visited the court of England, A. D. 1051), and made himself so agreeable to that prince, that he appointed him his secretary, and carried him with him into his own dominions. In a little time he became the prime favourite of his prince, and the dispenser of all preferments, humbling some, and exalting others, at his pleasure; in which difficult station, he confesseth, he did not behave with a proper degree of modesty and prudence. This excited the envy and hatred of many of the courtiers; to avoid the effects of which, he obtained leave from the duke to go in pilgrimage to the Holy Land, which was then become fashionable. With a company of 30 horsemen, he joined Sigfrid duke of Mentz, who, with many German nobles, bishops, clergy, and others, was preparing for a pilgrimage to Jerusalem. When they were all united, they formed a company of no fewer than 7000 pilgrims. In their way they spent some time at Constantinople, performing their devotions in the several churches. In their passage through Lycia, they were attacked by a tribe of Arabs, who killed and wounded many of them, and plundered them of a prodigious mass of money. Those who escaped from this disaster, at length reached Jerusalem, visited all the holy places, and bedewed the ruins of many churches with their tears, giving money for their reparation. They intended to have bathed in Jordan; but being prevented by the roving Arabs, they embarked on board a Genoese fleet at Joppa, and landed at Brundisium, from whence they travelled through Apulia to Rome. Having gone through a long course of devotions in this city, at the several places distinguished for their sanctity, they separated, and every one made the best of his way into his own country. When Ingulph and his company reached Normandy, they were reduced to 20 half-starved wretches, without money, cloaths, or horses: A faithful picture of the foolish disastrous

journeys into the Holy Land, so common in those times. Ingulph was now so much disgusted with the world, that he resolved to forsake it, and became a monk in the abbey of Fontenelle in Normandy; in which, after some years, he was advanced to the office of prior. When his old master was preparing for his expedition into England, A. D. 1066, he was sent by his abbot, with 100 marks in money, and 12 young men, nobly mounted and completely armed, as a present from their abbey. Ingulph having found a favourable opportunity, presented his men and money to his prince, who received him very graciously; some part of the former affection for him reviving in his bosom. In consequence of this he raised him to the government of the rich abbey of Croyland in Lincolnshire, A. D. 1096, in which he spent the last 34 years of his life, governing that society with great prudence, and protecting their possessions from the rapacity of the neighbouring barons by the favour of his royal master. The lovers of English history and antiquities are much indebted to this learned abbot, for his excellent history of the abbey of Croyland, from its foundation, A. D. 664, to A. D. 1091, into which he hath introduced much of the general history of the kingdom, with a variety of curious anecdotes that are nowhere else to be found. Ingulph died of the gout, at his abbey, A. D. 1109, in the 79th year of his age.

INHALER, in medicine, a machine for breathing in warm steams into the lungs, recommended by Mr. Mudge in the cure of the catarrhus cough. The body of the instrument holds about a pint; and the handle, which is fixed to the side of it, is hollow. In the lower part of the vessel, where it is soldered to the handle, is a hole, by means of which, and three others on the upper part of the handle, the water, when it is poured into the inhaler, will rise to the same level in both. To the middle of the cover a flexible tube about five or six inches long is fixed, with a mouth-piece of wood or ivory. Underneath the cover there is a valve fixed, which opens and shuts the communication between the upper and internal part of the inhaler and the external air. When the mouth is applied to the end of the tube in the act of inspiration, the air rushes into the handle, and up through the body of warm water, and the lungs become, consequently, filled with hot vapours. In expiration, the mouth being still fixed to the tube, the breath, together with the steam on the surface of the water in the inhaler, is forced up through the valve in the cover. In this manner, therefore, the whole act of respiration is performed through the inhaler, without the necessity, in the act of expiration, of either breathing through the nose, or removing the pipe from the mouth.

INHERITANCE, a perpetual right or interest in lands, invested in a person and his heirs. See **DESCENT**.

INHIBITION, a writ to inhibit or forbid a judge from farther proceeding in a cause depending before him.

Sometimes prohibition and inhibition are put together, as of the same import; but inhibition is most commonly a writ issuing out of a higher court-christian

Injection.

to a lower; and prohibition out of the king's court to an inferior court.

INHIBITION, in Scots law, a diligence obtained at the suit of a creditor against his debtor, prohibiting him from selling or contracting debts upon his estate to the creditor's prejudice.

INHUMATION, in chemistry, a method of digesting substances, by burying the vessel in which they are contained in horse-dung or earth.

INJECTION, the forcibly throwing certain liquid medicines into the body by means of a syringe, tube, clyster-pipe, or the like.

INJECTION, in surgery, the throwing in some liquor or medicine into a vein opened by incision. This practice, and that of transfusion, or the conveying the arterial blood of one man, or other animal, into another, were once greatly practised, but are now laid aside.

Anatomical INJECTION, the filling the vessels of a human, or other animal body, with some coloured substance, in order to make their figures and ramifications visible.

I. The best account of the method of injecting the *sanguiferous* vessels of animals, is that by the late Dr Monro, published in the Medical Essays, vol. i. p. 79.

"The instrument with which the liquor is commonly thrown into the vessels is a tight easy going syringe of brass, to which several short pipes are fitted, and can be fixed by screws, the other extremities of these pipes being of different diameters without any screw, that they may slide into other pipes, which are so exactly adapted to them at one end, that when they are pressed a little together, nothing can pass between them: and because their cohesion is not so great as to resist the pushing force of the injection, which would drive off this second pipe, and spoil the whole operation; therefore the extremity of this second sort of pipes, which receives the first kind, is formed on the outside into a square, bounded behind and before by a rising circle, which hinders the key that closely grasps the square part from sliding backwards or forwards; or a bar of brass must stand out from each side of it to be held with the fingers. The other extremity of each of these second sort of pipes is of different diameter; and near it a circular notch, capable of allowing a thread to be sunk into it, is formed; by this, the thread tying the vessel at which the injection is to be made, will not be allowed to slide off.

"Besides this form described, common to all this second sort of pipes, we ought to have some of the larger ones, with an additional mechanism, for particular purposes; as, for instance, when the larger vessels are injected, the pipe fastened into the vessel ought either to have a valve or a stop-cock, that may be turned at pleasure, to hinder any thing to get out from the vessel by the pipe; otherwise, as the injection, in such a case, takes time to coagulate, the people employed in making the injection must either continue all that while in the same posture; or, if the syringe is too soon taken off, the injected liquor runs out, and the larger vessels are emptied. When the syringe is not large enough to hold at once all the liquor necessary to fill the vessels, there is a necessity of filling it again. If, in order to do this, the syringe was to be ta-

ken off from the pipe fixed in the vessel, some of the injection would be lost, and what was exposed to the air would cool and harden; therefore some of the pipes ought to have a reflected curve tube coming out of their side, with a valve so disposed, that no liquor can come from the straight pipe into the crooked one; but, on the contrary, may be allowed to pass from the crooked to the straight one: the injector then, taking care to keep the extremity of the reflected pipe immersed in the liquor to be injected, may, as soon as he has pushed out the first syringeful, fill it again by only drawing back the sucker; and, repeating this quickly, will be able to throw several syringefuls into the vessels.

"All these different sorts of pipes are commonly made of brass.

"The liquors thrown into the vessels, with a design to fill the small capillary tubes, are either such as will incorporate with water, or such as are oily; both kinds have their advantages and inconveniences; which I shall mention in treating of each, and shall conclude with that which I have found by experience to succeed best.

"All the different kinds of glue, or ichthyocolla, syths, common glue, &c. dissolved and pretty much diluted, mix easily with the animal fluids, which is of great advantage, and will pass into very small vessels of a well-chosen and prepared subject, and often answer the intention sufficiently, where the design is only to prepare some very fine membrane, on which no vessels can be expected to be seen so large as the eye can discover whether the transverse sections of the vessels would be circular; or if their sides are collapsed. But when the larger vessels are also to be prepared, there is a manifest disadvantage to the usefulness and beauty of the preparation; for if nothing but the glutinous liquor is injected, one cannot keep a subject so long as the glue takes of becoming firm; and therefore, in dissecting the injected part, several vessels will probably be cut and emptied. To prevent this, one may indeed either soak the part well in alcohol, which coagulates the glue; but then it becomes so brittle, that the least handling makes it crack; and if the preparation is to be kept, the larger vessels appear quite shrivelled, when the watery part of the injection is evaporated: or the efflux of the injection may be prevented, by carefully tying every vessel before we are obliged to cut it; still, however, that does not hinder the vessels to contract when the glue is drying. If, to obviate these difficulties, the glutinous liquor should first be injected in such quantity as the capillary vessels will contain, and the common oily or waxy injection is pushed in afterwards to keep the larger vessels distended, the wax is very apt to harden before it has run far enough; the two sorts of liquors never mix irregularly, and the whole appears interrupted and broken by their soon separating from each other; which is still more remarkable afterwards, when the watery particles are evaporated.

"Spirits of wine coloured mixes with water and oils, and so far is proper to fill the very smaller vessels with: but, on the other hand, it coagulates any of our liquor it meets, which sometimes blocks up the vessels so much, that no more injection will pass; then-

Injection.

Injection. it scarce will suspend some of the powders that prove the most durable colours; and as it entirely evaporates, the vessels must become very small; and the small quantity of powder left, having nothing to serve for connecting its particles together, generally is seen so interrupted, that the small ramifications of vessels rather have the appearances of random scratches of a pencil, than of regular continued canals.

" Melted tallow, with a little mixture of oil of turpentine, may sometimes be made to fill very small vessels, and keeps the larger ones at a full stretch; but where any quantity of the animal liquors are still in the vessels, it is liable to stop too soon, and never can be introduced into numbers of vessels which other liquors enter; and it is so brittle, that very little handling makes it crack, and thereby renders the preparation very ugly (A).

" The method I have always succeeded best with, in making what may be called *subtile* or *fine injections*, is, first to throw in coloured oil of turpentine, in such a quantity as might fill the very small vessels; and, immediately after, to push the common coarse injection into the larger ones. The oil is subtile enough to enter rather smaller capillary tubes than any colouring can; its resinous parts, which remain after the spirituous are evaporated, give a sufficient adhesion to the particles of the substance with which it is coloured, to keep them from separating, and it intimately incorporates with the coarser injection; by which, if the injection is rightly managed, it is impossible for the sharpest eye to discover that two sorts have been made use of (B).

" All the liquors with which the vessels of animals are artificially filled, having very faint, and near the same colours, would not all appear in the very small vessels, because of their becoming entirely diaphanous, without a mixture of some substance to impart its colour to them; and where several sorts of even the largest vessels of any part were filled, one sort could not be distinguished from another, unless the colour of each was different; which has likewise a good effect in making preparations more beautiful. Wherefore anatomists have made use of a variety of such substances, according to their different fancies or intentions; such as gamboge, saffron, ink, burnt ivory, &c. which can be easily procured from painters. My design being only to consider those that are fit to be mixed with the injecting liquors proposed to fill capillary vessels, which is scarce ever to be done in any other, except the branches of the arteries and of some veins, I shall confine myself to the common colours employed to these last named two sorts of vessels, which colours are red, green, and sometimes blue, without mentioning the others, which require very little choice.

Injection. " Anatomists have, I imagine, proposed to imitate the natural colours of the arteries and veins in a living creature, by filling the arteries with a red substance, and the veins with a blue or green: from which, however, there are other advantages, such as the strong reflection which such bodies make of the rays of light, and the unaptness most such bodies have to transmit these same rays, without at least a considerable reflection of the rays peculiar to themselves; or, in other words, their unfitness to become completely pellucid; without which, the very fine vessels, after being injected, would still be imperceptible. The animal or vegetable substances made use of for colouring injections, such as cochineal, laque, *rad. aubuse*, brazilwood, indigo, &c. have all one general fault of being liable to run into little knots which stop some of the vessels; their colour fades sooner when kept dry; they more easily yield their tincture when the parts are preserved in a liquor; and rats, mice, and insects, will take them for food: for which reasons, though I have frequently succeeded in injecting them, I rather prefer the mineral kind, such as minium or vermilion for red; of which this last is, in my opinion, the best, because it gives the brightest colour, and is commonly to be bought finely levigated. The green-coloured powder generally used is verdigrease; but I rather choose that preparation of it called *distilled verdigrease*; because its colour is brighter, and it does not so often run into small knots as the common verdigrease, but dissolves in the oily liquors.

" The method of preparing the injection composed of these materials, is to take for the fine one, a pound of clear oil of turpentine, which is gradually poured on three ounces of vermilion, or distilled verdigrease finely powdered, or rather well levigated by grinding on marble; stir them well with a small wooden spatula till they are exactly mixed, then strain all thro' a fine linen rag. The separation of the grosser particles is, however, rather better made, by pouring some ounces of the oil upon the powder, and, after stirring them together strongly, stop rubbing with the spatula for a second or so, and pour off into a clean vessel the oil with the vermilion or verdigrease suspended in it; and continue this sort of operation till you observe no more of the powder come off; and all that remains is granulated. The coarser injection is thus prepared: Take tallow, 1 pound; wax, bleached white, 5 ounces; salad oil, 3 ounces; melt them in a skillet put over a lamp: then add Venice turpentine, 2 ounces; and as soon as this is dissolved, gradually sprinkle in of vermilion or verdigrease prepared, 3 ounces; then pass all through a clean, dry, warmed linen-cloth, to separate all the grosser particles; and, when you design to make it run far into the vessels, some oil of

(A) Rigierus (*Introduct. in notitiam rerum natur.*, &c. 4to, Hagae, 1743, titul. *Balsamum*) gives Ruysch's method of injecting and preserving animals, which, he says, Mr Blumentrost, president of the Petersburg academy, assured him was copied from the receipt given in Ruysch's own hand-writing to the Czar. According to this receipt, melted tallow, coloured with vermilion, to which, in the summer, a little white wax was added, was Ruysch's injecting *ceracia materies*.

(B) Mr Ranby's injecting matter, as published by Dr Hales, (*Hemast. Ex. 21.*), is white rosin and tallow, of each two ounces, melted and strained through linen; to which was added three ounces of vermilion, or finely ground indigo, which was first well rubbed with eight ounces of turpentine varnish.

Injection. of turpentine may be added immediately before it is used.

"The next thing to be considered, and indeed what chiefly contributes to the success of injections, is the choice and preparation of the subject whose vessels are to be filled.

"In choosing a fit subject, take these few general rules: 1. The younger the creature to be injected is, the injection will, *ceteris paribus*, go farthest, and *vice versa*. 2. The more the creature's fluids have been dissolved and exhaled in life, the success of the operation will be greater. 3. The less solid the part designed to be injected is, the more vessels will be filled. 4. The more membranous and transparent parts are, the injection flows better; whereas, in the solid very hard parts of a rigid old creature, that has died with its vessels full of thick strong blood, it is scarce possible to inject great numbers of small vessels.

"Therefore, in preparing a subject for injecting, the principal things to be aimed at, are, To dissolve the fluids, empty the vessels of them, relax the solids, and prevent the injection's coagulating too soon. To answer all these intentions, authors have proposed to inject tepid or warm water by the arteries, till it returns clear and untinted by the veins, and the vessels are thereby so emptied of blood, that all the parts appear white; after which, they push out the water by forcing in air; and, lastly, by pressing with their hands, they squeeze the air also out. After this preparation, one can indeed inject very subtilly; but generally there are inconveniences attend it. For in all the parts where there is a remarkable *tunica cellulosa*, it never misses to be full of the water, which is apt to spoil any parts designed to be preserved either wet or dry; and some particles of the water seldom miss to be mixed in the larger as well as smaller vessels with the oily injection, and make it appear discontinued and broken: wherefore it is much better to let this injection of water alone, if it can be possibly avoided, and rather to macerate the body or part to be injected a considerable time in water, made so warm (c) as one can hold his hand easily in it; taking care to keep it of an equal warmth all the time, by taking out some of the water as it cools, and pouring in hot water in its place; by which the vessels will be sufficiently softened and relaxed, the blood will be melted down, and the injection can be in no danger of hardening too soon; whereas, if the water is too hot, the vessels shrink, and the blood coagulates. From time to time we squeeze out the liquids as much as possible at the cut vessel by which the injection is to be thrown in (d). The time this maceration is to be continued, is always in proportion to the age of the subject, the bulk and thickness of what we design to inject, and the quantity of blood we observe in the vessels, which can only be learned by ex-

perience; at least, however, care ought to be taken, **injections.** that the whole subject, or part macerated, is perfectly well warmed all through; and that we continue the pressure with our hands till no more blood can be brought away, whatever position we put the subject in.

When the syringe, injections, and subject, are all in readiness, one of the second sort of pipes is chosen, as near to the diameter of the vessel by which the injection is to be thrown as possible; for if the pipe is too large, it is almost needless to tell it cannot be introduced. If the pipe is much smaller than the vessel, it is scarce possible to tie them so firmly together, but, by the wrinkling of the coats of the vessel, some small passage will be left, by which part of the injection will spring back on the injector in the time of the operation, and the nearest vessels remain afterwards undistended, by the loss of the quantity that oozes out. Having chosen a fit pipe, it is introduced at the cut orifice of the vessel, or at an incision made in the side of it; and then a waxed thread being brought round the vessel, as near to its coats as possible, by the help of a needle, or a flexible eyed probe, the surgeon's knot is made with the thread, and it is drawn as firmly as the thread can allow; taking care that it shall be sunk into the circular notch of the pipe all round, otherwise it will very easily slide off, and the pipe will be brought out probably in the time of the operation, which ruins it.

"If there have been large vessels cut, which communicate with the vessels you design to inject, or if there are any others proceeding from the same trunk, which you do not resolve to fill, let them be all carefully now tied up, to save the injected liquor, and make the operation succeed better in the view you then have.

"When all this is done, both sorts of injections are to be warmed over a lamp, taking care to stir them constantly, lest the colouring powder fall to the bottom and burn (e). The oil of turpentine needs be made no warmer than will allow the finger to remain in it, if the subject has been previously well warmed in water; when the maceration has not been made, the oil ought to be scalding hot, that it may warm all the parts which are designed to be injected. The coarse injection ought to be brought near to a boiling. In the mean time, having wrapt several folds of linen round the parts of the syringe which the operator is to gripe, and secured the linen with thread, the syringe is to be made very hot by sucking boiling water several times up (f), and the pipe within the vessel is to be warmed by applying a sponge dipped in boiling water to it (g).

"After all is ready, the syringe being cleared of the water, the injector fills it with the finer injection; and

(c) Ruysch orders a previous maceration for a day or two in cold water; which must have a better effect in melting the blood than warm water has.

(d) When Ruysch intended to inject the whole body, he put one pipe upwards, and another downwards, in the descending aorta.

(e) Ruysch melts his tallow by the heat of warm water, into which he puts the vessel containing the injection.

(f) He warms his syringe by laying it on hot coals.

(g) He warms his pipe, by putting the body, after the pipe is fixed in the vessel, into hot water. When this

Injection. and then introducing the pipe of the syringe into that in the vessel, he presses them together, and either with one hand holds this last pipe firm, with the other grips the syringe, and with his breast pushes the sucker; or, giving the pipe in the vessel to be held by an assistant, in any of the ways mentioned in the description of these sorts of pipes, he grips the syringe with one hand, and pushes the sucker with the other, and consequently throws in the injection, which ought to be done slowly, and with no great force, but proportioned to the length and bulk of the part to be injected and strength of the vessels. The quantity of this fine injection to be thrown in is much to be learned by use. The only rule I could ever fix to myself in this matter was to continue pushing till I was sensible of a stop which would require a considerable force to overcome. But this will not hold where all the branches of any vessel are not injected; as for instance, when the vessels of the thorax only are to be injected: for the aorta bears too great a proportion to the branches sent from it, and therefore less fine injection is requisite here. As soon as that stop is felt, the sucker of the syringe is to be drawn back, that the nearest large vessels may be emptied. Then the syringe is taken off, emptied of the fine injection, and filled with the coarser, which is to be pushed into the vessels quickly and forcibly, having always regard to the strength and firmness of the vessels, bulk, &c. of the part. Continue to thrust the sucker, till a full stop, or a sort of push backwards, is felt, when you must beware of thrusting any more, otherwise some of the vessels will be burst, and the whole, or a considerable share of the preparation you designed, will be spoiled by the extravasation, but rather immediately stop the pipe by the turn-cock, and take out the syringe to clean it, and allow sufficient time for the coarse injection to coagulate fully, before any part is dissected. Ruysch, immediately after throwing in the injection, put the body into cold water, and stirred it continually for some time, to prevent the vermilion to separate from the tallow."

II. The injection of the *lymphatic* system is much more difficult than that of the sanguiferous, on account of the extreme smallness of the vessels; so that till very lately it was almost quite impracticable. Methods indeed had been attempted for this purpose; but by reason of the improper form of the instruments, and the inferior skill of anatomists in former times, we may justly look upon this as one of the most modern improvements in anatomy.

The first thing to be considered, when the lymphatics are to be injected, is a proper method of discovering them; for this is by no means an easy matter, on account of their smallness and transparency.—To find out these vessels, the subject must be viewed in a proper place, where the light is neither very strong nor very weak. Mr Sheldon, who has written a treatise upon this subject, recommends a winter forenoon from ten to two; it being chiefly in the winter season that anatomical preparations are made, and because at that time of the day the light is more clear and steady. He says also from his own experience, that the light passing through the glass of a window is better for this purpose than the open air, as the vessels are more dis-

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tinely seen. The injecting of the vessels is likewise rendered more difficult in the open air by the ease with which the humidity is evaporated from them. It will likewise be necessary to incline the part in various ways to the light, as some of the vessels are most easily discoverable in one position and some in another. The lacteal trunks under the peritoneal coats of the intestines, and the lymphatics on the external surface of the liver, &c. particularly require this method. He discommends the use of magnifying glasses. "I am persuaded (says he), that those who attempt to find them through this medium, will not acquire that *visus eruditus* which is obtained to a surprising degree by those who have been much experienced in injecting lymphatic vessels. A lateral light is likewise preferable to an horizontal, or even to an oblique sky-light.

"The subjects must be laid upon a table of sufficient height, which might be contrived with a ledge fixed to the table in such a manner as to be water proof; which would be useful for preventing the quicksilver, which is almost always necessary for injecting these vessels, from being lost. The surface of the table should likewise be hollowed, so that the mercury which falls may be collected in the middle, where an hole with a stopper may be made to take out occasionally the quicksilver which collects. Such a table would also be convenient for holding water for the purpose of steeping membranous parts which are frequently to be injected; and which, from being exposed to the air, become dry; which also it is inconvenient and hazardous to move into water during the time of operation. Even a common table with a hole cut in the middle may answer the purpose: the hole may be round or square according to the fancy of the anatomist; but the table must be constructed of such materials as are not liable to warp in warm water. Should the anatomist not be provided with either of these tables, the parts must be laid in a tray or earthen dish, that the quicksilver may be saved."

The materials for injecting these vessels are only quicksilver, and the ceraceous or *coarse* injection of anatomists; the former being always used in injecting the lymphatics and lacteals, it being almost impossible to fill them with another fluid in the dead body. The ceraceous injection is chiefly used for the thoracic duct; and in some particular instances, where the lymphatic trunks have been found larger than the ordinary size, a coarse injection has been made use of.

Injections of the lymphatics may be made even while the animal is alive, and that without any great cruelty, by feeding it with milk previous to its being strangled. Of all the barbarous methods of opening the animal while alive, the most useful seems to be that of Mr Hunter, who directs to perforate the small intestines, and throw in starch-water with solutions of musk, or indigo and starch-water. "In a word (says Mr Sheldon), any gelatinous fluids rendered opaque with such colours as will be absorbed, are extremely useful for experiments of this kind; for much more may be seen by examining the vessels distended with a coloured fluid from natural absorption, than by anatomical

this to be done, a cork ought to be put into the pipe, to prevent the water getting into the vessel that is to be injected.

Injection. tomical injection practised in the dead body." Liberkuhn first discovered the ampullulæ by feeding children in whom the lacteal glands were obstructed previous to their death with milk; by which means not only the lacteal trunks became distended with chyle, but likewise the ampullulæ. Thus absorbing mouths of the lacteal vessels were discovered by Liberkuhn; and in a similar manner Asellius discovered the lacteals themselves. Thus also Eustachius discovered the thoracic duct in a horse; and Mr Hewson traced the lacteal vessels, lymphatics, and thoracic duct, in birds, by making ligatures on the root of the mesentery, and other parts, which had been previously fed with barley. Mr Hunter likewise was enabled to observe the lacteals of a crocodile when distended with chyle.

The coarse injection for the lymphatics is made of mutton-suet and yellow resin, in the proportion of two thirds of resin to one of suet. If required of a thicker consistence, we may add a small quantity of pure wax; if of a softer quality, we may augment the quantity of suet: Orpiment or king's yellow is generally made use of; though others are equally proper, provided they be fine enough.

The instruments necessary for injecting the lymphatic vessels are the injecting tube and pipes, lancets, blow-pipes, knives, scissars, forceps, needles, and thread. The old injecting tube has been found in a manner entirely useless, the pipe being fixed in a glass tube two or three feet long; which is one of the reasons why, before the time of Hewson, so little of the lymphatic system could be injected. Tubes of such a length are entirely unmanageable by one person, and it is impossible to perform the operation properly with two. To perform it in the best manner, the instrument should be held in the hand like a pencil or pen. The instruments used by our author are tubes made either of glass or of brass; which, when filled with mercury, may be held in the hand like a pen: a glass tube, however, is preferable to the metallic one. It is somewhat in the shape of a trumpet; six inches and an half in length, an inch and an half broad where broadest, and three-eighths of an inch where narrowest. A collar of steel half an inch broad and three quarters of an inch long is cemented to this pipe, and a smaller tube of the same metal is screwed upon the end of the collar; the whole terminating in a capillary tube about an inch in length. This last is the most difficult part of the whole work to execute; it should be drilled out of a solid piece of metal, and not made of a thin bit of plate soldered, as these are apt to turn ragged in the edges, and the folder is also liable to be destroyed by the mercury. Those used by Mr Sheldon were made by drilling a small hole lengthwise through a bit of well-tempered wire. It is cleaned by means of a very small piece of steel-wire capable of passing through the bore of the tube. This ought to be annealed lest it should break; in which case the broken bit could not easily be got out. Very small tubes may be made of glass drawn out as fine as we choose; and though very apt to break, they are easily repaired. They ought to be very thin, that they may be easily melted. Sometimes it has been found convenient to fit the collar with a steel stop-cock.

The brass tube represented by our author is about

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Injection. nine inches and an half in length, and half an inch wide where widest. The collar is a full quarter of an inch broad, and three quarters of an inch long; a steel piece and capillary tube being screwed to it as in the other.

The lancets are to be exquisitely sharp, in order to cut into the lymphatic vessels. The latter are easily inflated by the small silver blow-pipes usually put up in the dissecting cases by the London mathematical instrument makers: dissecting knives, fine-pointed scissars, accurately made dissecting forceps, with straight or crooked needles, are likewise substituted with advantage, as not being affected by the quicksilver.

We must next consider the proper subjects for injection. Mr Sheldon recommends, that they should be as free from fat as possible: he has always found in the human subject those who died universally dropsical, or of an ascites or anasarca, to be the best, for the following reasons, viz. in such there is little or no animal oil, and but a very small quantity of red blood; both of which, when they occur in great abundance, very much impede the discovery of the lymphatic vessels; but when the cellular vessels are loaded with water, the absorbents are more readily traced, and with less risk of wounding them in dissection: the preparations also, particularly the dried ones, are more lasting. This circumstance is found to be of most consequence in preparing the absorbent vessels of the trunk and extremities of the human subject. Of all the viscera in young subjects, only the liver and lungs can be injected with success; and these may be successfully injected even in the fœtus. It will be most proper to begin the operation upon the subject immediately after death, as lymph or chyle will then be more readily found in the vessels, than when we wait a longer time. In preparing the lacteals, previously distended with milk in the living subject, it is proper to have the intestines and mesentery plunged (with the ligature upon the root of the latter) into rectified spirit of wine. This process will coagulate the chyle; and the fluid being opaque, the vessels will be beautifully seen when we mean to prepare the parts, by preserving them in proof-spirit as wet specimens: "In this way (says Mr Sheldon) I have made in the dog one of the most natural preparations that can be seen of the lacteals injected from their orifices by the natural absorption." We may also prepare the lacteals by the method used by Mr Hunter, already mentioned; by which they will be very conspicuous, by the indigo absorbed from the cavity of the intestines. By tying the thoracic duct near its insertion into the angle formed between the subclavian and jugular veins on the left side, or by tying these veins on both sides, we may distend almost all the absorbents of the animal. Thus we are enabled to pursue these vessels in many parts where they have not yet been discovered, where they can scarcely be traced by injection, and even in some parts where it is utterly impossible for the injections to reach them.

Another method sometimes successfully used by our author, was first practised by Malpighi. In this the part is to be steeped in water, and the liquid changed as long as it appears tinged with blood; suffering the parts afterwards to remain in the same water till the putrefaction begins. As soon as this begins to take place, the air which is extricated will distend the lymphatics,

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Injection.

phatics, so that they may be easily seen, and then injected with quicksilver. It is, however, remarkable, that this method will not in general answer so well in the human species as in quadrupeds; the air having never passed by putrefaction into the human lacteals in any of the subjects which Mr Sheldon tried, though it will take place in those of the horse or ass, and many other animals: drawing of the lacteals may likewise be made in this method to very great advantage. In some parts of the human body also, this method may be employed to advantage; as the liver, heart, &c. It may likewise be useful to make ligatures on the large trunks of the vessels previous to the maceration, that thus the air may be confined as soon as it is extricated from the coats by putrefaction. Our author adds, that if ligatures were made upon the wrists and legs in *articulo mortis*, or immediately after death, the lymph would be stopped in the vessels, the latter would become distended, and might be injected with the greatest facility by the common method after taking off the ligature. Mr Sheldon in such a case recommends the tourniquet. "I have reason (says he) to believe, that absorption goes on as long as muscular irritability remains; which last continues a considerable time after the general life of the animal is lost." On this, however, we cannot forbear to remark, that making ligatures for such purposes upon a human creature in *articulo mortis*, or even immediately after death, favours so much of barbarity, that we cannot think it will be often practised. In some cases, even in the dead subject, ligatures are useful; as when we are searching for the lymphatics in the fingers and toes. In these it is useful to stroke up the parts with the finger, by which means the small quantity of lymph remaining in the vessels will be forced upwards, and stopped by the ligature; after which the vessels may be easily injected with quicksilver, as already mentioned.

To inject the vessels, we must open one or more of them, directing the point of the lancet almost always towards the trunk or trunks of the vessels, and taking care not to carry the incision through the opposite side. If the vessels happen to lie under the peritoneum as the lacteals, or under the pleura as the lymphatics of the lungs, we may cut into their cavity through these membranes. In injecting those of the extremities, however, and in many other parts of the body, it is absolutely necessary to dissect the vessels we design to fill away from the fat and reticular substance before we attempt to open them with the lancet. The tube with the pipe affixed to it is previously to be filled with mercury: the anatomist then inflates the vessel by means of the blow-pipe, takes the tube from the assistant, and introduces the small tube into the puncture. In this operation it will be found necessary not to carry the tube farther into the vessel than is sufficient to give the mercury a free passage; for if we introduce it farther, the passage of the mercury will be impeded by the pipe being pushed against the side of the vessel. Should not the fluid be able to effect a passage, it will then be necessary to press upon the surface of it in the tube with our fingers. If it descend freely, and without any of it passing between the side of the vessel and small pipe, we have only to fill up the tube with mercury as the latter descends; but if it gets out, we must

then tie the vessel. This, however, should always be avoided if possible; because, if not very dexterously performed, the operator will be apt to separate the tube from the vessel; and on this account the puncture ought always to be very small, no larger indeed than is necessary to allow the pipe to get in with difficulty. As the injection proceeds, the pressure upon the surface of the quicksilver must be carried on higher and higher in the course of the lymphatic, till we come near the gland or glands into which the vessels terminate; otherwise we shall seldom get the cells of the glands, or the vessels emerging from the opposite side of the glands, well injected. In injecting the lymphatic vessels of the extremities, it will be useful to raise the part where the pipe is inserted higher than the other end of the limb, and to make the assistant press with his hands along the skin in the course of the vessels, which will favour the progress of the injection. When the vessels are sufficiently filled, which may be known by the swelling of them, and by the resistance the mercury meets with, the assistant passes a ligature about the vessel and ties it above the puncture before the anatomist withdraws the injection-pipe.

The method of injecting the larger trunks or thoracic duct with the coarse injection is exactly similar to that already described for the sanguiferous vessels. Mr Sheldon, however, recommends the use of some pipes of a particular construction invented by himself. The improvement consists in shaping the ends of the pipes like a pen; taking care to make the edges and point blunt, to avoid cutting the vessel when we introduce them. Thus much larger tubes than those commonly in use may be admitted; and there is no occasion to make any bulb or rising near the extremity of these small pipes to prevent the thread from slipping off: for this will certainly hinder us from inserting pipes of such diameter as might otherwise be done.

Having thus shown the method of injecting the lymphatics, our author next proceeds to describe the method of dissecting and preparing them either for immediate demonstration, or for preservation for any length of time. In the dissection, great care is requisite, on account of the exquisite thinness of their coats: but if this should happen by accident, it will then be necessary to introduce the pipe at the ruptured part; and having secured it above and below with ligatures, to fill it again as before directed. Our author recommends, for the purpose of dissection, such knives as are made use of by the Germans and French in tracing the nerves. They must be made thin in the blade like lancets, and not much larger. A variety of different shaped blades, some single and others double-edged, will be necessary for various parts of the body; the fault of the common dissecting knives being that they are too thick in the blade, which makes them soon blunt, and occasions the trouble of perpetual grinding, which is not the case with those just recommended. A sharp-pointed forceps is necessary, in order to lay fast hold of the smallest portion of cellular substance; but they ought not to be so sharp as to endanger the puncturing of the vessels: nor should they by any means be bowed or stiff in the spring, to prevent the fingers of the operator from being wearied in the operation. They should also be made in such a manner as to hold large as well as small portions of reticular

Injection. ticular substance. For dissections of this kind, fine-pointed scissars and lancets fixed in handles are sometimes necessary; and it is frequently of use to plunge the parts into water, in order to loosen the reticular membrane connected with the outside of the coats of the vessels; by which means they may be dissected more easily, and with less danger of wounding them. The blood may be extracted by frequently changing the water. After being injected with quicksilver, the parts should not be allowed to remain long in the water, because the volatile alkali formed by putrefaction is apt to change the colour of the mercury.

The dissection being performed, the preparation is then to be preserved either in a wet or dry state, according to its nature. Preparations of the larger parts, as the trunk or extremities, should be preserved dry; and to dry them effectually, they should be exposed to a free current of air, but not to the rays of the sun; and the vessels should be displayed in their natural situation. When fully dried, they ought then to be varnished over with transparent spirit or copal varnish; which will not only preserve them from insects, but render them more beautiful, and the vessels more conspicuous. They should then be inclosed in glass cases, where they are to be placed in a horizontal position, and handled as little as possible.

To make preparations of the thoracic duct, we must in the first place fill the aorta, vena cava superior, and vena azygos or intercostalis, with coarse injection; then fill, with the same, the vessels below the right crus or little muscle of the diaphragm. The duct is sometimes prepared with quicksilver; but Mr Sheldon recommends to anatomists to make drawings of any thing new or remarkable in their preparations of the lymphatic vessels with quicksilver; as most of those specimens, particularly such as are dried, become at last totally useless by reason of the drying of the vessels and the escape or blackening of the mercury; or from the varnish growing more and more opaque with age. The quicksilver injection, however, in some cases is very useful. Thus, for instance, if we wish to demonstrate the valves in the thoracic duct, or any other large absorbent vessel, we need only inject the vessels with quicksilver, dissect and dry them, then cut them open, and let the mercury run out; after which the valves will appear by making sections in the coats of the vessels. This may be done still better by varnishing the vessels three or four times before the sections are made; because the varnish will strengthen the sides of the vessel. In wet preparations the valves in the cavities of these parts may likewise be demonstrated by opening them; or by inverting the vessels and suspending them in proof malt-spirits. Thus the valves that cover the terminations of the thoracic duct on the inside of the angle formed between the jugular and subclavian veins on the left side, and those which terminate the lymphatics on the right side of the neck, arm, and lungs, may be beautifully demonstrated. Specimens of the lacteal vessels, of the absorbents of the heart, lungs, liver, spleen, diaphragm, kidneys, &c. may be kept wet or dry, according to the particular nature of the preparation or view of the anatomist. Some preparations are the better for being dried and afterwards immersed in vials full of oil of turpentine; by which means the flesh will be rendered transparent,

Injection. the vessels distinctly seen, and the vessels appear extremely beautiful. The only disadvantage of this method is, that the parts on which the vessels pass, do not at all preserve their natural bulk by reason of their shrinking up; and as the wet preparations are free from this inconvenience, Mr Sheldon does not hesitate at assigning them a decided superiority over the dry ones.—Sometimes it is necessary to fix the preparations upon stiff paper or pasteboard, on account of their weight after being injected with mercury. The paper or pasteboard on which they are fastened ought to be of various colours, according to the nature of the preparation, in order to form a proper ground for showing the lymphatic vessels. Such small preparations as are preserved in spirits, or oil of turpentine, may be kept in bottles well closed with stoppers; and the larger in common preparation glasses. Our author describes a simple method of stopping the mouths of these preparation glasses, by which means the stopper is rendered nearly as durable as the glass itself. “In order to execute it, let the anatomist take care to have the upper surface of his bottles made plane, by desiring the workmen at the glass-house to flatten them in the making. This they will easily do in forming the round ones, but the flat bottles are attended with considerable difficulty. The right way to make them, I believe, would be to blow them in moulds of various sizes; the workman should likewise form the bottoms of the bottles perfectly flat, that they may stand upright and steady. Bottles of this form being provided for the larger preparations, we grind the upper surface of them on a plain plate of lead, about a quarter of an inch thick, and two feet in diameter; first with fine emery and water, then with powdered rotten stone, or putty first wet with water and at last dry; so that the surface may be reduced to an exact horizontal plane, and of as fine a polish as plate-glass. This will soon be done, as the manoeuvre requires but little dexterity; and the anatomist should be provided with a considerable number of these glasses prepared as above directed. To the top of each bottle a piece of plate-glass, cut by a diamond, is to be adapted so as completely to cover, but not project over, the edge of the bottle. When these two smooth surfaces are put upon each other, with a drop of water between, the attraction of cohesion is so considerable, that it requires great force to separate them.”

Many preparations of the lymphatics, and other parts preserved in bottles, do not require any strings to suspend them; particularly when fixed on pasteboard or paper: such as require suspension should be tied to strings fixed to the preparation below, and to small holes drilled in the substance of the glass at the bottom of the neck; or to small bits of glass that may be fixed on the inside of the same part. The preparation is thus suspended in limpid proof malt-spirit, the bottle being almost completely filled; the upper and polished surface of the bottle, and the plate of glass, are to be wiped clean and dry; a drop of solution of gum arabic is to be put on the polished surface of the bottle, the top strongly and steadily pressed upon it, so as to bring the two surfaces into as close contact as possible; after which the bottle is to be placed in a cool airy place to dry. A piece of wet ox-bladder, freed from fat, and soaked in water till it becomes mucilaginous,

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cilaginous, is then to be placed over the top, the air pressed out from between it and the glass; after which it must be tied with a pack-thread dipped in the solution of gum arabic. The bladder being cut off neatly under the last turn of the thread, is then to be dried, the string taken cautiously off, and the top and neck painted with a composition of lamp-black mixed with jappanners gold size: this soon dries, and leaves a fine smooth glossy surface, from which the dirt can at any time be as readily wiped off as from a mirror. By this method large bottles are as easily and effectually secured as small ones; and it is found to answer as well as the hermetical sealing of glasses, which in large vessels is altogether impracticable. If the bottoms have any inequalities which prevent them from standing steady, they may be easily made perfectly flat by grinding them with emery on the plate above mentioned. The tops, if well gummed, will even remain perfectly fixed on the glasses without the bladder: though in the common upright ones it may be advisable to put it on as a defence. Our author informs us, that since his making this discovery, he has used glass saucers; with flat tops gummed on. In these vessels the preparations, by reason of their horizontal posture, appear to great advantage. Thus he has exhibited very early abortions in their membranes, and some other preparations that cannot be suspended or viewed conveniently in the perpendicular direction. Some very delicate preparations, particularly those intended to be viewed with the microscope, those of the ampullæ lactææ of Liberkuhn, and of the valves of the absorbents, may be preserved either in spirits or dry in tubes closed in the manner just mentioned, and will appear to great advantage. Some of the dry ones may also be advantageously placed in square oblong boxes, made of pieces of plate or white glass neatly gummed together, with narrow slips of white or coloured paper, and the objects may be conveniently viewed in this manner. With respect to the stopper bottles, which are very convenient for holding small preparations, our author advises the stoppers to be perfectly well ground; that they pass rather lower down than the neck of the bottle for the convenience of drilling two holes obliquely through the inferior edge of the substance of the stopper, opposite to each other, for the convenience of fixing threads to hold the subject; for if the threads pass between the neck and stopper, a space will be left; or if the stopper be well ground, the neck of the bottle will be broken in endeavouring to press it down. On the other hand, if any space be left, the thread, by its capillary attraction, will act from capillary attraction, raise the spirits from the bottle, and cause evaporation, which will likewise take place from the chink between the stopper and neck.

INISTIOGE, a post town of Kilkenny, in the province of Leinster; 63 miles from Dublin. It is also a borough, and returns two members to parliament; patronage in the representative of Sir William Fownes.—It has two fairs.

INITIATED, a term properly used in speaking of the religion of the ancient heathens; where it signifies being admitted to the participation of the sacred mysteries. The word comes from the Latin *initiare*, of *initiare*, *initiare*; which properly signifies to begin sacrificing, or to receive or admit a person to the begin-

ning of the mysteries, or of ceremonies of less importance.

The ancients never discovered the deeper mysteries of their religion, nor even permitted some of their temples to be open, to any but those who had been initiated. See MYSTERY.

INJUNCTION, in law, a writ generally grounded upon an interlocutory order or decree out of the court of chancery or exchequer, sometimes to give possession to the plaintiff, for want of the defendant's appearance; sometimes to the king's ordinary court, and sometimes to the court-christian, to stop proceedings in a cause, upon suggestion made, that the rigour of the law, if it take place, is against equity and conscience in that case, that the complainant is not able to make his defence in these courts, for want of witnesses, &c. or that they act erroneously, denying him some just advantage. The writ of injunction is directed not only to the party himself, but to all and singular his counsellors, attornies, and solicitors; and if any attorney, after having been served with an injunction, proceeds afterward contrary to it, the court of chancery will commit the attorney to the Fleet for contempt. But if an injunction be granted by the court of chancery in a criminal matter, the court of king's bench may break it, and protect any that proceed in contempt of it.

INJURY, any wrong done to a man's person, reputation, or goods. See ASSAULT.

INK, a black liquor used in writing, generally made of an infusion of galls, copperas, and gum-arabic.

The properties which this liquor ought to have, are,

1. To flow freely from the pen, and sink a little into the paper, that the writing be not easily discharged.
 2. A very deep black colour, which should be as deep at first as at any time afterwards.
 3. Durability, so that the writing may not be subject to decay by age.
 4. Ink should be destitute of any corrosive quality, that it may not destroy the paper, or go through it in such a manner as to render the writing illegible.
- No kind of ink, however, hath yet appeared which is possessed of all these qualities. The ink used by the ancients was possessed of the second, third, and fourth qualities above-mentioned, but wanted the first. Dr Lewis hath discovered its composition from some passages in ancient authors. "Pliny and Vitruvius (says he) expressly mention the preparation of foot, or what we now call *lamp-black*, and the composition of writing-ink from lamp-black and gum. Dioscorides is more particular, setting down the proportions of the two ingredients, viz. three ounces of the foot to one of the gum. It seems the mixture was formed into cakes or rolls; which being dried in the sun, were occasionally tempered with water, as the cakes of Indian ink are among us for painting."

In Mr Delaval's Treatise on Colours, p. 37. he acquaints us, that with an infusion of galls and iron filings, he had not only made an exceedingly black and durable ink, but by its means, without the addition of any acid, dyed silk and woollen cloth of a good and lasting black. This kind of ink, however, though the colour is far superior to that of any other, hath the inconvenience of being very easily discharged, either by the smallest quantity of any acid, or even by simple water; because it doth not penetrate the paper

Injunction
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Ink.

Ink.

in such a manner as is necessary to preserve it from the instantaneous action of the acid or of the water. During the action of the infusion of galls upon the iron in making this kind of ink, a very considerable effervescence takes place, and a quantity of air is discharged, the nature of which hath not yet been examined.

The materials usually employed for the making of ink are, common green vitriol, or copperas and galls; but almost all of them are deficient in durability, which is a property of such importance, that Dr Lewis hath thought the subject of ink-making not unworthy of his attention. From experiments made by that author, he infers, that the decay of inks is chiefly owing to a deficiency of galls; that the galls are the most perishable ingredient, the quantity of these, which gives the greatest blackness at first (which is about equal parts with the vitriol), being insufficient to maintain the colour: that, for a durable ink, the quantity of galls cannot be much less than three times that of the vitriol; that it cannot be much greater without lessening the blackness of the ink: that by diminishing the quantity of water, the ink is rendered blacker and more durable; that distilled water, rain-water, and hard spring-water, have the same effects; that white-wine produces a deeper black colour than water; that the colour produced by vinegar is deeper than that by wine; that proof-spirit extracts only a reddish brown tinge; that the last-mentioned tincture sinks into, and spreads upon, the paper; and hence the impropriety of adding spirit of wine to ink, as is frequently directed, to prevent mouldiness or freezing: that other astringents, as oak-bark, bistort, floe-bark, &c. are not so effectual as galls, nor give so good a black, the colour produced by most of these, excepting oak-bark, being greenish: that the juice of flocs do not produce a black colour with martial vitriol; but that, nevertheless, the writing made with it becomes black, and is found to be more durable than common ink: that inks made with saturated solutions of iron in nitrous, marine, or acetic acids, in tartar, or in lemon-juice, were much inferior to the ink made with martial vitriol: that the colour of ink is depraved by adding quicklime, which is done with an intention of destroying any superabundant acid which may be supposed to be the cause of the loss of the colour of ink: that the best method of preventing the effects of this superabundant acid is probably by adding pieces of iron to engage it; and that this conjecture is confirmed by an instance the author had heard, of the great durability of the colour of an ink in which pieces of iron had been long immersed: and lastly, that a decoction of logwood used instead of water, sensibly improves both the beauty and deepness of the black, without disposing it to fade. The same author observes, that the addition of gum-arabic is not only useful, by keeping the colouring matter suspended in the fluid, but also by preventing the ink from spreading, by which means a greater quantity of it is collected on each stroke of the pen. Sugar, which is sometimes added to ink, is found to be much less effectual than gums, and to have the inconvenience of preventing the drying of the ink. The colour of ink is found to be greatly injured by keeping the ink in vessels made of copper or of lead, and probably of any other metal, excepting iron, which the vitriolic acid can dissolve.

Ink.

The foregoing experiments point out for the best proportions of the ingredients for ink, One part of green vitriol, one part of powdered logwood, and three parts of powdered galls. The best menstruum appears to be vinegar or white-wine, though for common use water is sufficient. If the ink be required to be of a full colour, a quart, or at most three pints, of liquor, may be allowed to three ounces of galls, and to one ounce of each of the other two ingredients. Half an ounce of gum may be added to each pint of the liquor. The ingredients may be all put together at once in a convenient vessel, and well shaken four or five times each day. In 10 or 12 days the ink will be fit for use, though it will improve by remaining longer on the ingredients. Or it may be made more expeditiously, by adding the gum and vitriol to a decoction of galls and logwood in the menstruum. To the ink, after it has been separated from the feculencies, some coarse powder of galls, from which the fine dust has been sifted, together with one or two pieces of iron, may be added; by which its durability will be secured.

In some attempts made by the Doctor to endow writing ink with the great durability of that of the ancients, as well as the properties which it has at present, he first thought of using animal-glues, and then of oily matters. "I mixed both lamp-black (says he) and ivory-black with solution of gum arabic, made of such consistence as just to flow sufficiently from the pen. The liquors wrote of a fine black colour; but when dry, part of the colour could be rubbed off, especially in moist weather, and a pencil dipped in water washed it away entirely.

"I tried solutions of the animal-glues with the same event. Isinglass or fish-glue being the most difficultly dissoluble of these kinds of bodies, I made a decoction of it in water, of such strength that the liquor concreted into a jelly before it was quite cold: with this jelly, kept fluid by sufficient heat, I mixed some ivory-black: characters drawn with this mixture on paper bore rubbing much better than the others, but were discharged without much difficulty by a wet pencil.

"It was now suspected, that the colour could not be sufficiently fixed on paper without an oily cement. As oils themselves are made miscible with watery fluids by the intervention of gum, I mixed some of the softer painters varnish, after mentioned, with about half its weight of a thick mucilage of gum arabic, working them well together in a mortar till they united into a smooth uniform mass: this was beaten with lamp-black, and some water added by little and little, the rubbing being continued till the mixture was diluted to a due consistence for writing. It wrote freely, and of a full brownish-black colour: the characters could not be discharged by rubbing, but water washed them out, though not near so readily as any of the foregoing. Instead of the painters varnish or boiled oil, I mixed raw linseed oil in the same manner with mucilage and lamp-black; and on diluting the mixture with water, obtained an ink not greatly different from the other.

"Though these oily mixtures answered better than those with simple gums or glues, it was apprehended that their being dischargeable by water would render them unfit for the purposes intended. The only way
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Ink. of obviating this imperfection appeared to be, by using a paper which should admit the black liquid to sink a little into its substance. Accordingly I took some of the more sinking kinds of paper, and common paper made damp as for printing; and had the satisfaction to find, that neither the oily nor the simple gummy mixtures spread upon them so much as might have been expected, and that the characters were as fixed as could be desired, for they could not be washed out without rubbing off part of the substance of the paper itself.

"All these inks must be now and then stirred or shaken during the time of use, to mix up the black powder, which settles by degrees to the bottom: those with oil must be well shaken also, though not used, once a-day, or at least once in three or four days, to keep the oil united with the water and gum; for if once the oil separates, which it is apt to do by standing at rest for some days, it can no longer be mixed with the thin fluid by any agitation. But though this imperfect union of the ingredients renders these inks less fit for general use than those commonly employed, I apprehend there are many occasions in which these kinds of inconveniences will not be thought to counterbalance the advantage of having writings which we may be assured will be as lasting as the paper they are written upon. And indeed the inconvenience may be in a great measure obviated by using cotton in the ink-stand, which, imbibing the fluid, prevents the separation of the black powder diffused through it.

"All the inks, however, made on the principle we are now speaking of, can be discharged by washing, unless the paper admits them to sink into its substance. The ancients were not insensible of this imperfection; and sometimes endeavoured to obviate it, according to Pliny, by using vinegar, instead of water, for tempering the mixture of lamp-black and gum. I tried vinegar, and found it to be of some advantage, not as giving any improvement to the cement, but by promoting the sinking of the matter into the paper. As this washing out of the ink may be prevented by using a kind of paper easy enough to be procured, it is scarcely to be considered as an imperfection; and indeed, on other kinds of paper, it is an imperfection only so far as it may give occasion to fraud, for none of these inks are in danger of being otherwise discharged than by design. The vitriolic inks themselves, and those of printed books and copperplates, are all dischargeable; nor can it be expected of the ink-maker to render writings secure from frauds.

"But a further improvement may yet be made, namely, that of uniting the ancient and modern inks together; or using the common vitriolic ink instead of water, for tempering the ancient mixture of gum and lamp-black. By this method it should seem that the writings would have all the durability of those of former times, with all the advantage that results from the vitriolic ink fixing itself in the paper. Even where the common vitriolic mixture is depended on for the ink, it may in many cases be improved by a small addition of the ancient composition, or of the common Indian ink which answers the same purpose: when the vitriolic ink is dilute, and flows so pale from the pen, that the fine strokes, on first writing, are scarcely visible, the addition of a little Indian ink is the readiest

means of giving it the due blackness. By this admixture it may be presumed also that the vitriolic ink will be made more durable, the Indian ink in some measure covering it, and defending it from the action of the air. In all cases, where Indian ink or other similar compositions are employed, cotton should be used in the ink-stand, as already mentioned, to prevent the settling of the black powder."

Since the invention of printing much less attention than formerly has been paid to the making of ink, so that now the art seems to be in a great measure lost. This will appear from a comparison of some ancient manuscripts with the writings of modern times. It being of the utmost importance, however, that public records, wills, and other valuable papers, which cannot admit of being printed, should be written with ink of a durable quality, this inattention seems to have been very culpable, and a restoration of the method of making writing ink a very valuable acquisition. "The necessity (says Mr Asple*) of paying greater attention to this matter may readily be seen, by comparing the rolls and records that have been written from the 15th century to the end of the 17th, with the writings we have remaining of various writings from the 5th to the 12th centuries. Notwithstanding the superior antiquity of the latter, they are in excellent preservation; but we frequently find the former, though of more modern date, so much defaced that they are scarcely legible."

Our author agrees with Dr Lewis in the opinion that the ancient inks were composed of foot or ivory black instead of the galls, copperas, and gums, which form the composition of ours. Besides their black inks, however, the ancients used various other colours, as red, gold and silver, purple, &c. Green ink was frequently used in Latin manuscripts, especially in the latter ages; and it was frequently employed in signatures by the guardians of the Greek emperors till their wards were of age. Blue or yellow ink was seldom used except in manuscripts; but (says Mr Asple) "the yellow has not been much in use, as far as we can learn, these 600 years." Some kinds of characters, particularly the metallic, were burnished. Wax was used by the Latins and Greeks as a varnish, but especially by the former, and particularly in the 9th century. It continued a long time in vogue.

A treatise upon inks was published by Peter Caniparius professor of medicine at Venice; of which an edition was printed at London in 1660. It is divided into six parts. The first treats of inks made from pyrites, stones, and metals; the second of such as are made from metals and calces; the third from soots and vitriols; the fourth of the different kinds of inks used by the librarii or book-writers, by printers, and engravers; likewise of staining or writing upon marble, stucco, or scagliola, and of encaustic modes of writing; also of liquids for painting or colouring leather and linen or woollen cloths; restoring inks that had been decayed by time; together with many methods of effacing writing, restoring decayed paper, and different modes of secret writing. The fifth treats of writing inks made in different countries from gums, woods, the juices of plants, &c. as well as of different kinds of varnishes. The sixth treats of the different methods of extracting vitriol, and the chemical uses of it.

Weckerus

Ink.

* *Origin of Alphab. Writing.*

Ink.

Wackerus de Secretis, a treatise printed at Basil in 1612, contains a number of curious particulars concerning ink. He gives also receipts for making gold and silver inks, composed both with these metals and without them; directions for making inks for secret writing, and for defacing them; though in this last part there are many particulars bordering too much on the marvellous.

In the Philosophical Transactions for 1787, Dr Blagden gives some account of a method of restoring decayed inks so as to render them legible. His experiments originated from a conversation with Mr Aftle already quoted, on the question whether the inks made eight or ten centuries ago, and which are found to have preserved their colour very well, were made of the same materials now employed or not? In order to decide the question, Mr Aftle furnished the Doctor with several manuscripts on parchment and vellum from the 9th to the 15th centuries inclusively. Some of these were still very black; others of different shades, from a deep yellowish brown to a very pale yellow, in some parts so faint that it could scarcely be seen. This was tried with simple and phlogisticated alkalis, the mineral acids, and infusion of galls. From these experiments it appeared that the ink anciently employed was of the same nature as at present: the letters turned of a reddish or yellowish brown with alkalis became pale, and were at length obliterated by the dilute mineral acids. The drop of acid liquor, which had been put upon a letter, changed to a deep blue or green on the addition of phlogisticated alkali; with an infusion of galls, in some cases the letters acquired a deep tinge, in others a slight one. "Hence (says the Doctor) it is evident, that one of the ingredients was iron, which there is no reason to doubt was joined with the vitriolic acid; and the colour of the more perfect MSS, which in some was a deep black, and in others a purplish black, together with the restitution of that colour in those which had lost it by the infusion of galls, sufficiently proved that another of the ingredients was astrigent matter, which from history appears to have been that of galls. No trace of a black pigment of any sort was discovered; the drop of acid, which had completely extracted a letter, appearing of an uniform pale and ferruginous colour, without an atom of black powder, or other extraneous matter floating in it."

As this account differs very materially from the former extracted from Mr Aftle's writings, so the reason given for the continuance of the colour differs no less. This, according to Dr Blagden, "seems to depend very much on a better preparation of the material upon which the writing was made, namely the parchment or vellum; the blackest letters being generally those which had sunk into it the deepest. Some degree of effervescence was commonly to be perceived when acids were in contact with the surface of these old vellums. I was led, however, to suspect, that the ancient inks contained rather a less proportion of iron than the more modern; for, in general, the tinge of colour produced by the phlogisticated alkali in the acid laid upon them, seemed less deep; which, however, might depend in part upon the length of time they had been kept: and perhaps more gum was used in them, or

they were washed over with some kind of varnish, tho' not such as gave any gloss."

Ink.

Among the specimens with which our author was favoured by Mr Aftle, there was one which differed very materially from the rest. It was said to be a manuscript of the 15th century: the letters were of a full engrossing hand, angular without any fine strokes, broad, and very black. None of the chemical solvents above mentioned seemed to produce any effect. Most or them seemed rather to make the letters blacker, probably by cleaning the surface; and the acids, after having been rubbed strongly upon the letters, did not strike any deeper tinge with the phlogisticated alkali. Nothing could obliterate these but what took off part of the vellum; when small rolls of a dirty matter were to be perceived. "It is therefore unquestionable (says the Doctor) that no iron was used in this ink; and, from its resistance to the chemical solvents, as well as a certain clotted appearance in the letters when examined closely, and in some places a slight degree of gloss, I have little doubt that they were formed of a sooty or carbonaceous powder and oil, probably something like our present printer's ink; and am not without suspicion that they were actually printed."

On examining this MS. more fully, our author was convinced that it was really a part of a very ancient printed book. In considering the methods of restoring the legibility of decayed writings, our author observes, that perhaps one of the best may be to join phlogisticated alkali with the calx of iron which remains; because the precipitate formed by these two substances greatly exceeds that of the iron alone. On this subject Dr Blagden disagrees with Mr Bergmann; but to bring the matter to a test, the following experiments were made.

1. The phlogisticated alkali was rubbed in different quantities upon the bare writing. This, in general, produced little effect; though, in a few instances, it gave a bluish tinge to the letters, and increased their intensity; "probably (says the Doctor) where something of an acid nature had contributed to the diminution of their colour." 2. By adding, besides the alkali, a dilute mineral acid to the writing, our author found his expectations fully answered; the letters then changing quickly to a very deep and beautiful blue. It is but of little consequence whether the acid or phlogisticated alkali be first added; though upon farther consideration the Doctor inclined to begin with the alkali. The reason is, that when the alkali is first put on, the colour seems to spread less, and thus not to hurt the legibility of the writing so much as would otherwise be done. His method is to spread the alkali thin over the writing with a feather, then to touch it as gently as possible upon or nearly over the letters with the diluted acid by means of a feather or bit of stick cut to a blunt point. The moment that the acid liquor is applied, the letters turn to a fine blue, beyond comparison stronger than the original trace of the letter; and by applying a bit of blotting-paper to suck up the superfluous liquid, we may in a great measure avoid the staining of the parchment: for it is this superfluous liquor which, absorbing part of the colouring matter from the letters, becomes a dye to whatever it touches. Care ought, however, to be taken

Ink.

not to allow the blotting paper to come in contact with the letters, because the colouring matter may easily be rubbed off while soft and wet. Any one of the three mineral acids will answer the purpose effectually : Dr Blagden commonly uses the marine. But whichever of the three is used, it ought to be diluted so far as not to be in danger of corroding the parchment ; after which the degree of strength seems not to be a matter of great nicety.

Another method of restoring the legibility of old writings is by wetting them with an infusion of galls in white wine : but this is subject to the same inconvenience with the former, and is besides less efficacious. The Doctor is of opinion that the acid of the galls by itself would be better for the purpose than the infusion of the whole substance of them ; and he thinks also that a preferable kind of phlogisticated alkali might be prepared either by purifying the common kind from iron as much as possible, or by making use of the volatile alkali instead of the fixed. Mr Asle mentions a method of restoring the legibility of decayed writings ; but says that it ought not to be hazarded lest a suspicion of deceit should arise.

In the Monthly Review of this volume of the Transactions, we find a method proposed of preventing ink from decaying, which seems very likely to answer the purpose. It consists in washing over the paper to be written upon with the colouring matter of Prussian blue, which will not deprave it in colour, or any other respect. By writing upon it with common ink afterwards, a ground of Prussian blue is formed under every stroke ; and this remains strong after the black has been decayed by the weather, or destroyed by acids. Thus the ink will bear a larger proportion of vitriol at first, and will have the advantage of looking blacker when first written.

Indian Ink, a valuable black for water-colours, brought from China and other parts of the East Indies, sometimes in large rolls, but more commonly in small quadrangular cakes, and generally marked with Chinese characters. Dr Lewis, from experiments made on this substance, hath shown that it is composed of fine lamp-black and animal-glue : and accordingly, for the preparation of it, he desires us to mix the lamp-black with as much melted glue as is sufficient to give it a tenacity proper for being made into cakes ; and these when dry, he tells us, answered as well as those imported from the East Indies, both with regard to the colour and the freedom of working. Ivory-black, and other charcoal blacks, levigated to a great degree of fineness, answered as well as the lamp black ; but in the state in which ivory-black is commonly sold, it proved much too gritty, and separated too hastily from the water.

Printing Ink, is totally different from Indian ink, or that made use of in writing. It is an oily composition, of the consistence of an ointment : the method of preparing it was long kept a secret by those whose employment it was to make it, and who were interested in concealing it ; and even yet is but imperfectly known. The properties of good printing ink

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are, to work clean and easily, without daubing the types, or tearing the paper ; to have a fine black colour ; to wash easily off the types ; to dry soon ; and to preserve its colour, without turning brown. This last, which is a most necessary property, is effectually obtained by setting fire to the oil with which the printing ink is made for a few moments, and then extinguishing it by covering the vessel (A). It is made to wash easily off the types, by using soap as an ingredient ; and its working clean depends on its having a proper degree of strength, which is given by a certain addition of rosin. A good deal, however, depends on the proportion of the ingredients to each other ; for if too much soap is added, the ink will work very foul, and daub the types to a great degree. The same thing will happen from using too much black, at the same time that both the soap and black hinder the ink from drying ; while too much oil and rosin tear the paper, and hinder it from washing off.—The following receipt has been found to make printing ink of a tolerable good quality. “ Take a Scots pint of linseed oil, and set it over a pretty brisk fire in an iron or copper vessel capable of holding three or four times as much. When it boils strongly, and emits a thick smoke, kindle it with a piece of paper, and immediately take the vessel off the fire. Let the oil burn for about a minute ; then extinguish it by covering the vessel ; after it has grown pretty cool, add two pounds of black rosin, and one pound of hard soap cut into thin slices. If the oil is very hot when the soap is added, almost the whole mixture will run over the vessel. The mixture is then to be set again over the fire ; and when the ingredients are thoroughly melted, a pound of lamp-black, previously put through a lawn sieve, is to be stirred into it. The whole ought then to be ground on a marble stone, or in a mill like the levigating mill described under the article CHEMISTRY, n° 599.”

Though the above receipt is greatly superior to any that hath been hitherto published, all of which are capitally deficient in not mentioning the necessary ingredients of rosin and soap ; yet it must be acknowledged, that ink made in this manner is inferior in point of colour, and is likewise more apt to daub the types and make an indistinct impression, than such as is prepared by some of those who make the manufacture of this commodity their employment ; so that either a variation in the proportion of the ingredients, a nicety in the mixture, or some additional ingredient, seems necessary to bring it to the requisite perfection.

Ink for the Rolling Press, is made of lintseed oil burnt in the same manner as that for common printing-ink, and then mixed with Francfort-black, and finely ground. There are no certain proportions which can be determined in this kind of ink ; every workman adding oil or black to his ink as he thinks proper, in order to make it suit his own taste.—Some, however, mix a portion of common boiled oil, which has never been burnt : but this must necessarily be a bad practice, as such oil is apt to go through the paper ; a fault very common in prints, especially if the paper

Ink.

(A) This is mentioned by Dr Lewis in his Philosophical Commerce of Arts ; but he seems not to have been acquainted with the method of giving it the other necessary properties.

Ink. is not very thick. No soap is added; because the ink is not cleared off from the copperplates with alkaline ley as in common printing, but with a brush dipped in oil.

INK is also an appellation given to any coloured liquor used in writing, whether red, yellow, green, &c. Many different kinds of these inks may be prepared by the directions given under the article *COLOUR-Making*, which it would be superfluous here to repeat.

Sympathetic Ink, a liquor with which a person may write, and yet nothing appear on the paper after it is dry, till some other means are used, such as holding the paper to the fire, rubbing it over with some other liquor, &c.

These kinds of ink may be divided into seven classes, and that with respect to the means used to make them visible; viz. 1. Such as become visible by passing another liquor over them, or by exposing them to the vapour of that liquor. 2. Those that do not appear so long as they are kept close, but soon become visible on being exposed to the air. 3. Such as appear by strewing or sifting some very fine powder of any colour over them. 4. Those which become visible by being exposed to the fire. 5. Such as become visible by heat, but disappear again by cold or the moisture of the air. 6. Those which become visible by being wetted with water. 7. Such as appear of various colours, red, yellow, blue, &c.

I. The first class contains four kinds of ink, viz. solutions of lead, bismuth, gold, and green vitriol. The first two become visible in the same manner, viz. by the contact of sulphureous liquids or fumes. For the first, a solution of common sugar of lead in water will answer as well as more troublesome preparations. If you write with this solution with a clean pen, the writing when dry will be totally invisible: but if it be wetted with a solution of *hepar sulphuris*, or of orpiment, dissolved by means of quick-lime; or if it be exposed to the strong vapours of these solutions, but especially to the vapour of volatile tincture of sulphur; the writing will appear of a brown colour, more or less deep according to the strength of the sulphureous fume. By the same means, what is wrote with the solution of bismuth in spirit of nitre will appear of a deep black.

The sympathetic ink prepared from gold depends on the property by which that metal precipitates from its solvent on the addition of a solution of tin. If you write with a solution of gold in aqua regia, and let the paper dry gently in the shade, nothing will appear for the first seven or eight hours. Dip a pencil or a small fine sponge in the solution of tin, and drawing it lightly over the invisible characters, they will immediately appear, of a purple colour.

Characters wrote with a solution of green vitriol carefully depurated, will likewise be invisible when the paper is dry; but if wetted with an infusion of galls, they will immediately appear as if wrote with common ink. If, instead of this infusion, a solution of the phlogisticated alkali, impregnated with the colouring matter Prussian blue is made up of, the writing will appear of a very deep blue.

II. To the second class belong the solutions of all those metals which are apt to attract phlogiston from

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the air, such as lead, bismuth, silver, &c.. The sympathetic ink of gold already mentioned belongs also to this class; for if the characters wrote with it are long exposed to the air, they become by degrees of a deep violet colour, nearly approaching to black. In like manner, characters wrote with a solution of silver in aquafortis are invisible when newly dried, but being exposed to the sun, appear of a grey colour like slate. To this class also belong solutions of lead in vinegar; copper in aquafortis; tin in aqua regia; emery, and some kinds of pyrites, in spirit of salt; mercury in aquafortis; or iron, in vinegar. Each of these has a particular colour when exposed to the air; but they have the disagreeable property of corroding the paper, so that after some time the characters appear like holes cut out of the paper.

III. The third class of sympathetic inks contains such liquids as have some kind of glutinous viscosity, and at the same time are long a drying; by which means, though the eye cannot discern the characters wrote with them upon paper, the powders strewed upon them immediately adhere, and thus make the writing become visible. Of this kind are urine, milk, the juices of some vegetables, weak solutions of the deliquescent salts, &c.

IV. This class, comprehending all those that become visible by being exposed to the fire, is very extensive, as it contains all those colourless liquids in which the matter dissolved is capable of being reduced, or of reducing the paper, into a sort of charcoal by a small heat. A very easily procured ink of this kind is oil of vitriol diluted with as much water as will prevent it from corroding the paper. Letters wrote with this fluid are perfectly invisible when dry, but instantly appear as black as if wrote with the finest ink on being held near the fire. Juice of lemons or onions, a solution of sal-ammoniac, green vitriol, &c. will answer the same purpose, though not so easily, or with so little heat.

V. The fifth class comprehends only solutions of regulus of cobalt in spirit of salt; for the properties of which, see *CHEMISTRY*, n° 822.

VI. This class comprehends such inks as become visible when characters wrote with them are wetted with water. They are made of all such substances as deposit a copious sediment when mixed with water, dissolving only imperfectly in that fluid. Of this kind are dried alum, sugar of lead, vitriol, &c. We have therefore only to write with a strong solution of these salts upon paper, and the characters will be invisible when dry; but when we apply water, the small portion of dried salt cannot again be dissolved in the water. Hence the insoluble part becomes visible on the paper, and shows the characters wrote in white, grey, brown, or any other colour which the precipitate assumes.

VII. Characters may be made to appear of a fine crimson, purple, or yellow, by writing on paper with solution of tin in aqua regia, and then passing over it a pencil dipt in a decoction of cochineal, Brazil-wood, logwood, yellow wood, &c.—For an account of the nature of all these sympathetic inks, however, and the principles on which they are made, see the articles *CHEMISTRY* and *COLOUR-Making*, *passim*.

INK-Stones, a kind of small round stones of a white, H b red,

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Inn.

red, grey, yellow, or black, colour, containing a quantity of native martial vitriol, whence they derive the property of making ink, and from thence their name. They are almost entirely soluble in water, and besides their other ingredients, contain also a portion of copper and zinc.

IRIS-STONE. See *MOON-STONE*.

INLAND, a name for any part of a country at a distance from the sea.

INLAND Navigation. See CANAL and (*Inland*) NAVIGATION.

INLAND Trade, that kind of trade carried on between the different parts of the same kingdom, whether over land, or by means of inland navigation.

INLAYING. See VENEERING, MOSAIC, and MARQUETRY.

INLEALED, in our old writers, signifies entangled or ensnared. It is used in the champion's oath.

INLISTING, in a military sense. See LISTING.

INMATES, such persons as are admitted for their money, to live in the same house or cottage with another man, in different rooms, but going in at the same door; being usually supposed to be poor, and not able to maintain a whole house themselves. These are inquirable in a court-leet.—No owner or occupier of a cottage shall suffer any inmates therein, or more families than one to inhabit there, on pain of forfeiting 10s. per month to the lord of the keet.

INN, a place appointed for the entertainment and relief of travellers.

Inns are licensed and regulated by justices of the peace, who oblige the landlord to enter into recognizances for keeping good order. If a person who keeps a common inn, refuses to receive a traveller into his house as a guest, or to find him victuals and lodging on his tendering a reasonable price for them, he is liable to an action of damages, and may be indicted and fined at the king's suit. The rates of all commodities sold by inn-keepers, according to our ancient laws, may be assessed: and inn-keepers not selling their hay, oats, beans, &c. and all manner of victuals at reasonable prices, without taking any thing for litter, may be fined and imprisoned, &c. by 21 Jac. I. c. 21. Where an inn-keeper harbours thieves, persons of infamous character, or suffers any disorders in his house, or sets up a new inn where there is no need of one, to the hindrance of ancient and well-governed inns, he is indictable and fineable: and by statute, such inn may be suppressed. Action upon the case lies against any inn-keeper, if a theft be committed on his guest by a servant of the inn, or any other person not belonging to the guest; though it is otherwise where the guest is not a traveller, but one of the same town or village, for there the inn-keeper is not chargeable; nor is the master of a private tavern answerable for a robbery committed on his guest: it is said, that even tho' the travelling guest does not deliver his goods, &c. into the inn-keeper's possession, yet if they are stolen, he is chargeable. An inn-keeper is not answerable for any thing out of his inn, but only for such as are within it; yet, where he of his own accord puts the guest's horse to graze, and the horse is stolen, he is answerable, he not having the guest's orders for putting such horse to graze. The inn-keeper may justify

the stopping of the horse, or other thing of his guest, for his reckoning, and may retain the same till it be paid. Where a person brings his horse to an inn, and leaves him in the stable, the inn-keeper may detain him till such time as the owner pays for his keeping; and if the horse eats out as much as he is worth, after a reasonable appraisement made, he may sell the horse and pay himself: but when a guest brings several horses to an inn, and afterwards takes them all away except one, this horse so left may not be sold for payment of the debt for the others; for every horse is to be sold, only to make satisfaction for what is due for his own meat.

INNS. Our colleges of municipal or common law professors and students, are called *inns*: the old English word for houses of noblemen, bishops, and others of extraordinary note, being of the same signification with the French word *botel*.

Inns of Court are so called, as some think, because the students there are to serve and attend the courts of judicature; or else, because anciently these colleges received none but the sons of noblemen, and better sort of gentlemen, who were here to be qualified to serve the king in his court; as Fortescue affirms. And, in his time, he says, there were about 2000 students in the inns of court and chancery, all of whom were *filii nobilium*, or gentlemen born. But this custom has gradually fallen into disuse; so that in the reign of queen Elizabeth, Sir Edward Coke does not reckon above 1000 students, and the number at present is very considerably less; for which judge Blackstone assigns the following reasons. 1. Because the inns of chancery, being now almost totally filled by the inferior branches of the profession, are neither commodious nor proper for the resort of gentlemen of any rank or figure; so that there are very rarely any young students entered at the inns of chancery. 2. Because in the inns of court all sorts of regimen and academical superintendence, either with regard to morals or studies, are found impracticable, and therefore entirely neglected. Lastly, because persons of birth and fortune, after having finished their usual courses at the universities, have seldom leisure or resolution sufficient to enter upon a new scheme of study at a new place of instruction; wherefore few gentlemen now resort to the inns of court, but such for whom the knowledge of practice is absolutely necessary in such as are intended for the profession.

Our inns of court, justly famed for the production of men of learning in the law, are governed by masters, principals, benchers, stewards, and other officers; and have public halls for exercises, readings, &c. which the students are obliged to attend and perform for a certain number of years, before they can be admitted to plead at the bar. These societies have not, however, any judicial authority over their members; but instead of this they have certain orders among themselves, which have by consent the force of laws. For lighter offences persons are only excommunicated, or put out of commons; for greater, they lose their chambers, and are expelled the college; and when once expelled out of one society, they are never received by any of the others. The gentlemen in these societies may be divided into benchers, utter-barristers, inner-barristers, and students.

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The four principal inns of court, are the Inner Temple and Middle Temple, heretofore the dwelling of the Knights Templars, purchased by some professors of the common law about 300 years ago; Lincoln's Inn, and Gray's Inn, anciently belonging to the earls of Lincoln and Gray. The other inns are the two Serjeants Inns.

Inns of Chancery were probably so called, because anciently inhabited by such clerks as chiefly studied the forming of writs, which regularly belonged to the curfitors, who are officers of chancery.

The first of these is Thavies Inn, begun in the reign of Edward III. and since purchased by the society of Lincoln's Inn. Beside this, we have New Inn, Symond's Inn, Clement's Inn, Clifford's Inn, anciently the house of the Lord Clifford; Staple Inn, belonging to the merchants of the staple; Lion's Inn, anciently a common inn with the sign of the lion; Furnival's Inn, and Bernard's Inn.

These were heretofore preparatory colleges for younger students; and many were entered here, before they were admitted into the inns of court. Now they are mostly taken up by attorneys, solicitors, &c.

They all belong to some of the inns of court, who formerly used to send yearly some of their barristers to read to them.

INNATE IDEAS, those supposed to be stamped on the mind, from the first moment of its existence, and which it constantly brings into the world with it: a doctrine which Mr. Locke has taken great pains to refute.

INNERKEITHING. See INVERKEITHING.

INNERLOCHY. See INVERLOCHY and FORT-WILLIAM.

INNIS. See INCH.

INNISCLOCHRAN, or the STONEY ISLAND, an island in Lough Ree, in the river Shannon, between the counties of Westmeath and Roscommon, at which place a monastery was founded by St. Dermot, about the beginning of the 6th century.

INNISFAIL (derived from *Inis Bheal*, that is, "the island of Bheal"), one of the ancient names of Ireland, so denominated from *Béal*, the principal object of adoration among the ancient inhabitants of the British isles. Innisfail has been erroneously translated the *Island of Destiny*, as *Bheal* was sometimes taken for *Fate* or *Providence*.

INNISFALLEN, an island in the lake of Killarney, in the county of Kerry and province of Munster: in it are the ruins of a very ancient religious house, founded by St. Finian, the patron saint of these parts, and to him the cathedral of Aghadoe is also dedicated. The remains of this abbey are very extensive, its situation romantic and retired. Upon the dissolution of religious houses, the possessions of this abbey were granted to Captain Robert Collam. The island contains about 12 acres, is agreeably wooded, and has a number of fruit trees. St. Finian flourished about the middle of the 6th century; he was surnamed in Irish *Lobbar*, his father's name was *Conail* the son of *Esfhod*; descended from *Kian* the son of *Alild*, king of Munster. There was formerly a chronicle kept in this abbey, which is frequently cited by Sir J. Ware and other antiquaries under the title of the *Annals of Innisfallen*. They contain a sketch of universal history,

from the creation of the world to the year 430 or thereabouts, but from thence the annalist has amply enough prosecuted the affairs of Ireland down to his own times. He lived to the year 1215. Sir J. Ware had a copy of them, whereof there is an imperfect transcript among the MSS. of the library of Trinity-College, Dublin. They were continued by another hand to the year 1320. Bishop Nicholson, in his Irish historical library, informs us, that the duke of Chandos had a complete copy of them down to 1320 in his possession. These annals tell us, that in the year 1180, the abbey, which had at that time all the gold and silver and richest goods of the whole country deposited in it, as the place of greatest security, was plundered by Mildwin son of Daniel O'Donoghoe, as was also the church of Ardferit, and many persons were slain in the very cemetery by the M'Cartys; but God, as it is said in this chronicle, punished this impiety by the untimely end of some of the authors of it.

INNISHANNON, a town in the county of Cork and province of Munster, 134 miles from Dublin; situated on the river Bandon, six miles from Kinsale. Here is a charter school for above 30 boys. The linen manufacture has been much encouraged by the late Mr. Adderly. The river is navigable to Collier's quay, about half a mile below the place. On the west side of the town is a stone bridge. This place was formerly walled, and of some note, as appears by the foundations of several castles and large buildings discovered in it. The town of Innishannon, together with its ferry, were granted to Philip de Barry by Hen. V. by letters patent, anno 1412. It has two fairs.

INNISHIRKAN, an island situated between Cape Clear Island and Baltimore Bay, in the county of Cork and province of Munster. In this island stood the castle of Dunelong, possessed by the O'Driscolls, which was surrendered after the defeat of the Spaniards to Captain Hervey on 23d Feb. 1602. There was afterwards a regular fortification erected on part of the island, which was garrisoned in Queen Ann's time, but it has been for several years dismantled; about a mile to the south are the remains of an ancient abbey, founded 1460, for Franciscans, by Florence O'Driscoll. This island has very good land, and is vastly preferable to that of Cape Clear island. To the north-west of Innishirkan island lies Hare island, a large fruitful spot; and near it are four small islands called the *Sebemes*: also along the coast, in the following order from east to west, are Horse island, containing 100 acres; Castle island, containing 119 acres; Long island, containing 316 acres; and west of all these is a small spot called Goat island. All these islands, together with the adjacent coast, produce large crops of fine English barley.

INNISKILLING, a borough, market, fair, and post town of Ireland, in the county of Fermanagh and province of Ulster, lying between three lakes. It is about 24 miles east of Ballyshannon, and 79 north-west of Dublin. It sends two members to parliament; patron Lord Inniskilling, this place giving title of viscount to the family of Cole. Its inhabitants distinguished themselves in several considerable engagements in the wars of Ireland at the revolution, out of which a regiment of dragoons, bearing the title of the *Inniskillings*, was mostly formed. They form the 6th regiment

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ment of dragoons in the British army. It has a barrack for three companies of foot.

INNOCENT'S DAY, a festival of the Christian church, observed on December 28th, in memory of the massacre of the innocent children by the command of Herod king of Judæa. See *JESUS Christ*; and *Jews*, n° 24. par. ult. The Greek church in their kalendar, and the Abyssinians of Ethiopia in their offices, commemorate 14,000 infants on this occasion.

INNUENDO (of *innuo* "I nod or beckon"), is a word frequently used in writs, declarations, and pleadings, to ascertain a person or thing which was named, but left doubtful, before: as, he (*innuendo* the plaintiff) did so and so; mention being before made of another person.—In common conversation or writing, an innuendo denotes an oblique hint or distant reference, in contradistinction to a direct and positive charge.

INO (fab. hist.), a daughter of Cadmus and Harmonia, who nursed Bacchus. She married Athamas king of Thebes, after he had divorced Nephele, by whom he had two children Phryxus and Helle. Ino became mother of Melicerta and Learchus; and soon conceived an implacable hatred against the children of Nephele, because they were to ascend the throne in preference to her own. Phryxus and Helle were informed of Ino's machinations, and they escaped to Colchis on a golden ram. Juno, zealous of Ino's prosperity, resolved to disturb her peace; and more particularly because she was of the descendants of her greatest enemy, Venus. Tisiphone was sent by order of Juno to the house of Athamas; and she filled the whole palace with such fury, that Athamas taking Ino to be a lioness and her children whelps, pursued her and dashed her son Learchus against a wall. Ino escaped from the fury of her husband; and from a high rock she threw herself into the sea with Melicerta in her arms. The gods pitied her fate; and Neptune made her a sea deity, which was afterwards called Leucothoe. Melicerta became also a sea god, known by the name of Palemon.

INOA, festivals in memory of Ino, celebrated yearly with sports and sacrifices at Corinth. An anniversary sacrifice was also offered to Ino at Megara, where she was first worshipped under the name of Leucothoe.—Another in Laconia, in honour of the same. It was usual at the celebration to throw cakes of flour into a pond, which if they sunk were presages of prosperity, but if they swam on the surface of the waters they were inauspicious and very unlucky.

INOCARPUS, in botany: A genus of the monogynia order, belonging to the decandria class of plants. The corolla is funnel-shaped; the calyx bifid; the stamina are placed in a double series; the fruit is a monospermous plum.

INOCULATION, or *Budding*, in gardening, is commonly practised upon all sorts of stone fruit; as nectarines, peaches, apricots, plums, cherries, as also upon oranges and jasmines: and indeed this is preferable to any sort of grafting for most sorts of fruit. The method of performing it is as follows: You must be provided with a sharp pen-knife with a flat haft, which is to raise the bark of the stock to admit the bud; and some found balsa-mat, which should be soaked in water, to increase its strength, and render it more pliable: then having taken off the cuttings from the

trees you would propagate, you must choose a smooth part of the stock, about five or six inches above the surface of the ground, if designed for dwarfs; but if for standards, they should be budded six feet above-ground. Then with your knife make an horizontal cut across the rind of the stock, and from the middle of that cut make a slit downwards, two inches in length, that it may be in the form of a T; but you must be careful not to cut too deep, lest you wound the stock: then having cut off the leaf from the bud, leaving the foot-stalk remaining, you should make a cross cut, about half an inch below the eye, and with your knife slit off the bud, with part of the wood to it: this done, you must with your knife pull off that part of the wood which was taken with the bud, observing whether the eye of the bud be left to it or not; for all those buds which lose their eyes in stripping, are good for nothing: then having gently raised the bark of the stock with the flat haft of your pen-knife clear to the wood, thrust the bud therein, observing to place it smooth between the rind and wood of the stock, cutting off any part of the rind belonging to the bud that may be too long for the slit made in the stock; and so having exactly fitted the bud to the stock, tie them closely round with balsa-mat, beginning at the under part of the slit, and so proceeding to the top, taking care not to bind round the eye of the bud, which should be left open.

When your buds have been inoculated three weeks or a month, those which are fresh and plump you may be sure are joined; and at this time you should loosen the bandage, which if it be not done in time, will injure if not destroy the bud. The March following cut off the stock sloping, about three inches above the bud, and to what is left fasten the shoot which proceeds from the bud: but this must continue no longer than one year; after which the stock must be cut off close above the bud. The time for inoculating is from the middle of June to the middle of August: but the most general rule is, when you observe the buds formed at the extremity of the same year's shoot, which is a sign of their having finished their spring-growth. The first sort commonly inoculated is the apricot; and the last the orange-tree, which should never be done till the latter end of August. And in doing this work, you should always make choice of cloudy weather; for if it be done in the middle of the day, when the weather is hot, the shoots will perspire so fast, as to leave the buds destitute of moisture.

INOCULATION, in a physical sense, is used for the transplantation of distempers from one subject to another, particularly for the engraftment of the small-pox; which, though of ancient use in the Eastern countries, is but a modern practice among us, at least under the direction of art.

It is well observed by the Baron Dimisdale, that accident hath furnished the art of medicine with many valuable hints, and some of its greatest improvements have been received from the hands of ignorance and barbarism. This truth is remarkably exemplified in the practice of inoculation of the small-pox: but to the honour of the British physicians, they measured not the value of this practice by the meanness of its origin, but by its real importance and utility; they patronised a barbarous discovery with no less zeal and affection.

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affection than if it had been their own. Indeed the whole nation might be said to have adopted the practice; for the greatest encouraged it by becoming examples, and the wisest were determined by the general event of the method.

As to the origin of the art of inoculating the small-pox, as well as the time and place in which it was performed, they are equally unknown to all by whom the practice is adopted. Accident probably gave rise to it. Pylarini says, that among the Turks it was not attended to except amongst the meaner sort. Dr Ruffel informs us in the *Philosophical Transactions*, vol. lvi. p. 142. that no mention is made of it by any of the ancient Arabian medical writers that are known in Europe; and the physicians who are natives in and about Arabia, assert, that nothing is to be found regarding it in any of those of a more modern date. He farther says, that he engaged some of his learned Turkish friends to make enquiry; but they did not discover any thing on this subject of inoculation either in the writings of physicians, historians, or poets. Until the beginning of the 18th century, all the accounts we have of inoculating the small-pox are merely traditional. The silence on this subject, observed amongst writers in the countries where the practice obtained, Dr Ruffel supposes, with great probability, to be owing to the physicians there never countenancing or engaging in it. It is also remarkable, that before Pylarini's letter to the Royal Society in 1701, nor yet for several years after, this practice is not noticed by any of the most inquisitive travellers. On this Dr Ruffel very justly observes, that customs, the most common in distant countries, are often the least apt to attract the observation of travellers, who, engaged in other pursuits, must be indebted to accident for the knowledge of such things as the natives seldom talk of, upon the belief that they are known to all the world.

The first accounts we have in the learned world concerning inoculation, are from two Italian physicians, viz. Pylarini and Timoni, whose letters on the subject may be seen in the *Philosoph. Transf. abr.* vol. v. p. 370, &c. The first is dated A. D. 1701; the next is dated A. D. 1713. Whether our inquiries are extended abroad or confined to our own country, inoculation hath been practised under one mode or other time immemorial; in Great Britain and its adjacent isles we have well authenticated accounts, extending farther backward than any from the continent. Dr Williams of Haverfordwest, who wrote upon inoculation in 1725, proves, that it had been practised in Wales, though in a form somewhat different, time out of mind. Mr Wright, a surgeon in the same place, says, that buying the small pox is both a common practice, and of long standing in that neighbourhood. He says, that in Pembrokehire there are two large villages near the harbour of Milford, more famous for this custom than any other, viz. St Ishmael's and Marlora. The old inhabitants of these villages say, that it hath been a common practice; and that one William Allen of St Ishmael's, who in 1722 was 90 years of age, declared to some persons of good sense and integrity, that this practice was used all his time; that he well remembered his mother telling him, that it was a common practice all her time, and that she got the

small-pox that way; so that at least we go back 160 years or more.

In the Highlands of Scotland and some of the adjacent isles, Dr Alexander Monro senior informs us, that the custom through ages past hath been, to put their children to bed with those who laboured under a favourable small-pox, and to tie worsted threads about their childrens wrists, after having drawn them through variolous pustules.

According to the result of Dr Ruffel's inquiries, the Arabians assert, that the inoculation of the small-pox has been the common custom of their ancestors, and that they have no doubt of its being as ancient as the disease itself. It is remarkable, that buying the small-pox is the name universally applied in all countries to the method of procuring the disease: it is true that there are other terms; but in Wales and Arabia, as well as many other countries, this is the usual appellation. From the sameness of the name, and the little diversity observable in the manner of performing the operation, it is probable that the practice of inoculation in these countries was originally derived from the same source. From its extensive spread, it is probably of great antiquity too.

In the year 1717, Lady Mary Wortley Montague, wife of the English ambassador at Constantinople, had her son inoculated there at the age of six years; he had but few pustules, and soon recovered. In April 1721, inoculation was successfully tried on seven condemned criminals in London, by permission of his majesty. In 1722, Lady Mary Wortley Montague had a daughter of six years old inoculated in this island; soon after which, the children of the royal family that had not had the small-pox were inoculated with success; then followed some of the nobility, and the practice soon prevailed. And here we date the commencement of inoculation under the direction of art.

From the example of the royal family in England, the practice was adopted in Germany, particularly in Hanover, and its adjacent countries.

After Mr Maitland had succeeded with those he had inoculated in and about London, he introduced the practice into Scotland in the year 1726.

Sweden soon followed the example of the British. Russia lately engaged one of our principal promoters and improvers of this art. And now there are not many countries that do not more or less practise it.

Different Modes of Inoculation. The practice of inoculation having obtained in every part of the world, it may be grateful, at least to curiosity, to have a general account of the different modes that are and have been adopted in that practice.

Inoculation with the blood of variolous patients hath been tried without effect: the variolous matter only, produces the variolous disease.

The application of the variolous matter takes place in a sensible part only; the activity of the virus is such, that the smallest atom, though imperceptible to any of our senses, conveys the disease as well as the largest quantity. Hence the most obvious method is the prick of a needle or the point of a lancet dipped in the matter of a variolous pustule.

Cotton or thread is used, that is previously rubbed with powdered variolous scabs; this thread is drawn with,

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with a needle through the cutis, but not left in. This is the method in some parts of the East Indies. The Indians pass the thread on the outside of the hand, between any of the fingers, or between the fore-finger and thumb. The Thessalian women inoculate in the forehead and chin.

Some abrade the scarf-skin, and rub in the powdered dry scabs which fall from the pustules of patients with the small-pox.

Many of the Greek women make an oblique puncture with a needle, on the middle of the top of the forehead, on each cheek, the chin, each metacarpus, and each metatarsus; then drop in each a little of the pus just taken warm from a patient, and brought in a servant's bosom. Others in Greece make several little wounds with a needle in one, two, or more places, in the skin, till some drops of blood ensue; then the operator pours a drop of warm pus fresh from a pustule, and mixes it with the blood as it issues out; then the wound is covered by some with a bandage, by others with half a walnut shell placed with its concave side over each orifice.

The Chinese convey a pellet of variolated cotton, with the addition of a little musk, into the nostrils of the patient; they collect dry pustules, and keep them in a porcelain bottle well corked; and when they inoculate, they mix a grain of musk with three or four grains of the dry scales, and roll them in cotton. This method may be called *inodoration*.

About Bengal, in the East Indies, the person who intends to be inoculated, having found a house where there is a good sort of the small-pox, goes to the bed of the sick person, if he is old enough; or if a child, to one of his relations, and speaks to him as follows: "I am come to buy the small-pox." The answer is, "Buy if you please." A sum of money is accordingly given, and one, three, or five pustules, for the number must always be odd, and not exceeding five, extracted whole, and full of matter. These are immediately rubbed on the skin of the outside of the hand between the fore-finger and the thumb; and this suffices to produce the disease. The same custom obtains in Algiers, Tunis, Tripoli, and other countries.

Very similar to the custom amongst the people about Bengal, &c. is that in Arabia, where on some fleshy part they make several punctures with a needle imbrued in variolous matter, taken from a pustule of a favourable kind. Here they buy the small-pox too, as follows: the child to be inoculated carries a few raisins, dates, sugar-plums, or such like; and showing them to the child from whom the matter is to be taken, asks how many pocks he will give in exchange? The bargain being made, they proceed to the operation; but this buying, though still continued, is not thought necessary to the success of the operation. The Arabs say that any fleshy part is proper; but generally they insert the matter between the fore-finger and thumb on the outside of the hand.

The Georgians insert the matter on the fore-arm.

The Armenians introduce the matter on the two thighs. In Wales the practice may be termed *infriction* of the small-pox. There some of the dry pustules are procured by purchase, and are rubbed hard upon the naked arm or leg.

The practice in some places is to prick the skin be-

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tween some of the fingers by means of two small needles joined to one another; and after having rubbed a little of the matter on the spot, a circle is made by means of several punctures of the bigness of a common pustule, and matter is again rubbed over it. The operation is finished by dressing the wound with lint.—Another custom is to mix a little of the variolous matter with sugar, and give it to be drank in any agreeable liquor.

Incisions have been made in the arms and legs, and thread, cotton, or lint, previously dipped in the variolous matter, was lodged in them. The practice of some is to bathe the feet in warm water, and then secure lint dipped in the variolous matter on the instep, or other part of the foot, where the skin is thin. Others apply a small blistering plaster; and when the scarf-skin is elevated and slipped off, the variolous matter is applied to the surface of the true skin, and confined there by a little lint or plaster. Scratching the skin with a pin or needle, and then rubbing the part with lint, previously dipped in variolous matter, is the custom in some places.

In the Highlands of Scotland they rub some part of the skin with fresh matter, or dip worried in variolous matter, and tie it about the children's wrists. They observe, that if fresh matter is applied a few days successively, the infection is more certain than by one application.

Objections to INOCULATION answered. I. "It is not lawful."

In answer to this, the Scriptures ask, Is it lawful to save life, or to destroy it? Luke vi. 9. And as it is a difficulty with many serious people, whether to admit of this practice or not, this objection should be considered in a religious view. We should in this case remember, that as the fall of man brought the danger of diseases into the world, so to evade, oppose, or destroy it, is not only his right, but duty, if in his power. And if events imply the cause, a long run of uninterrupted success implies an efficacious remedy. Though some die under this management, it is sufficient to prove the lawfulness of a remedy, that it is proper for and has by experience been found in most cases effectual to the end for which it was used. When danger surrounds us, no conduct is more proper than to inquire into and pursue the means of escape. To neglect our safety is to sink below the brutes, who by instinct avoid the evils to which they are exposed. Inoculation is a means of saving life in many instances, and of moderating the severity of affliction in more. Wilfully then to neglect the means of saving life is to be guilty of murder.

II. "It is bringing a distemper on ourselves, and so usurping the sacred prerogative of God."

1. As to the first part of this objection, if by distempers are meant sickness and pain, that is practised daily in other instances, in concurrence with the Scripture dictate, viz. of two evils choose the least. But the supposition of objectors in this instance is not altogether true. For by inoculation, a disease is not properly said to be communicated. It only excites and frees us from one, which, though latent, is already in us: or (which in effect is the same) inoculation, by an advantageous mode of infecting, &c. frees the patient in all instances from the usual difficulties of the disease; saves

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saves the life of most who submit to it; and with the natural small-pox it destroys that disposition in the body, without which the disease cannot take place. It is owned that some hazard attends it: it is sometimes mortal, and indeed it is fit it should be so: it is generally successful, that encourages us to proceed: it sometimes, though rarely fails; hence we are cautious and careful, and led to act with a dependence on Him to whom belong the issues from death.

2. Respecting the offence given to God; a reliance on Providence does not imply that we are not to prevent or oppose the evils which we foresee, and which we have in our power to guard against by prudent precautions. Would these objectors, in other instances, refuse the means of lessening the malignancy and danger of disease, than which the practice of inoculation is no more? Let these scrupulous persons say, whether, when God permits the discovery of preserving ourselves from an impending evil, he forbids our availing ourselves of that discovery? If our Maker offers us a remedy, it is offending him to reject it.

III. "The decrees of God have fixed the commission of every disease, and our precautions cannot prevent what he hath determined."

However true it is that our days are determined, &c. yet it is God's revealed will, and not his secret purposes, which we are to regard as the rule of duty. God has required of us to have a tender regard to our lives; and those who disobey him herein are guilty of a degree of self-murder, and will never be acquitted of that guilt by the secret determination of Heaven concerning them. Besides, God who has ordained the end, has also determined the means leading to it. St Paul, in his dangerous voyage, had a special revelation to assure him, that all who were with him should escape; and yet when the seamen were getting out of the ship, he declares that if they did not stay in it they could not be saved, Acts xxvii. 31. God purposed to preserve them in the way whereby they were afterwards delivered.

IV. "We should not do evil that good may come."

If inoculation is in its own nature a moral evil, it certainly should be rejected, however great its advantages may seem to be. The prospect of relief from any calamity in life should not tempt us to offend God. But those who make this objection proceed on a mistake. Their principle is true with regard to moral evil, but is not so when applied to physical. It is certainly lawful to pull down a house to save a great number from being burnt; this is a physical evil, which can hardly take place without some degree of moral evil; and many other instances may be pointed out, where, for a greater good, a lesser ill is submitted to. And is the small ill induced by inoculation to be compared with all those evils which are tolerated and authorised by all laws?

V. "The patient may die; and then his last moments are distressed, and the future reflections of his friends are grievous."

This objection leads many to decline the practice of inoculation, even when they allow the theory of it to be reasonable. They hope to escape the distemper in the natural way, and they have fears of dying in this; and thus they are prevented from going into it. But they should consider what grounds they have for either the one or the other, and what is to be advanced to

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balance the account, by examining the different degrees of probability that attend their hopes and fears in the use or neglect of inoculation. Dying is a serious thing: but if inoculation be a probable and lawful means of preserving life in a time of danger, it is a duty to comply with it; and what more peaceful reflection than to die in the way of duty?

VI. "Fear is a dangerous passion in the small-pox; but inoculation increases the causes of fear, by lessening our faith and trust in God."

When the small-pox is left to nature, such are its ravages, that not to fear would be to sink beneath humanity; its consequences are too grievous to be treated with neglect. But experience manifests the safety that attends receiving the disease by inoculation; it is therefore so far a remedy to that just fear which enhances the danger when the disease is left to itself. As to faith in God, none is desirable but that which is agreeable to the Scripture; and a disregard to calamities and dangers is never the effect of that. Inoculation is a means of safety; and it is as rational to conclude, that our lives should be preserved without eating and drinking, as that we shall be delivered from danger without a prudent care for our own safety. We are to depend on the care of Providence only in the way of duty. To boast of courage and trust in God, while we omit the means of escaping danger which surrounds us, is not faith, but presumption. Thus, when inoculation becomes a probable means by which to save life, it is a presumption, and not trust, to neglect it.

VII. "Inoculation does not exempt from future infection."

If, by inoculation of the small-pox the same disease is produced, the same effects may be expected from it when artificially produced as in the natural way. It is inconceivable, that a contagious substance, the very seminal matter of the small-pox, should propagate, instead of its own, another disease. De Haen is an acute physician, and was a violent opposer of inoculating the small-pox; but he never supposed that the matter of the small-pox will produce any disease but itself. Observation alone determined the opinion, that the natural small-pox does not attack a second time: the same stands good in favour of the artificial disease. And to this numberless trials have been made without effect, to reinfect those in whom the small-pox had taken place by inoculation.

VIII. "Other diseases are communicated with the matter of the small-pox, by inoculating it."

That carelessness or wilfulness in the operator may in some instances give cause for this objection is true; but that by the matter of a variolous pustule, any other disease hath been conveyed, is yet to be proved. As the confluent and malignant small-pox have not yet been observed to produce their own degree and mode of this distemper when infused by inoculation, it is scarcely conceivable that they should transmit another disease essentially different. The venereal disease is known to be as communicable as any; yet several have been inoculated from patients labouring under considerable degrees of the venereal disease, and no ill consequences ever yet were known to follow, none to give the least suspicion of the kind. If the variolous matter may convey another disease in the artificial, it may do

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do the same in the natural way; and even then, advantage is attendant on inoculation, for we can choose a healthy person to take the infection from; but no instance of the kind hath ever occurred.

IX. "Perhaps the disease may never attack in the natural way."

Such objectors should be informed, that this distemper cannot be given to one who never would have it; for they only who are susceptible of it can take it by inoculation, as is evident from numerous experiments made to verify this fact. Again, the small-pox may be said to be general; so few there are who are exempted from it, that they can hardly be considered as an exception to the general law: it is therefore worth while to inoculate, first, to ascertain the safety of the individual from the disease; and, secondly, on account of the general advantages of this practice, in case he should be susceptible of the infection. On this subject Dr Jurin hath inserted an ingenious paper in the Philosophical Transactions; in which he observes, that it is difficult to ascertain the exact number who die without having the small-pox; but that, of all the children that are born, there will some time or other die of the small-pox one in fourteen; and that of persons of all ages taken ill of the small-pox, there will die thereby two in eleven. From a table of burials it appears, that in Edinburgh and St Cuthbert's parish, during ten years, about one-tenth of the dead were killed by the small-pox. Farther, as it cannot be known that any individual is exempted from the small-pox, his hazard of dying of that distemper, being made up of the hazard of having it, and the hazard of dying of it if he has it, will be exactly the same, viz. that of one in eight or nine (whether the proportion of mankind that escape having the small-pox be great or small). In inquiry from house to house for the number of people with the small-pox, in several towns, during one year, it appeared that near one in five died who had them; and that of eighty-two persons who were inoculated in these places in the same year, not one died.

X. "It requires much thought to know what we should do with regard to inoculation."

Not to dwell on the absurdity of this objection, and of complaining that consideration is a burden when it is necessary for the preservation of life, it may suffice to point out, that a sacred writer tells us, that "a prudent man foreseeth the evil, and hideth himself; but fools pass on and are punished."

XI. "It endangers others."

Since very few of mankind now escape the small-pox, it must sooner or later come to every place; therefore, if it be true in fact that a much greater number lose their lives by the natural than by the artificial infection, it is of more service to introduce the small-pox in a favourable way and season, than passively to allow it to destroy multitudes. As to spreading the disease by introducing *inoculation*, it is but of little consequence; for *inoculating* where the disease does not already exist, is differently circumstanced from this practice, where it already prevails in the natural way; the quantity of the circumambient contagion is less, or the same extent of atmosphere is less impregnated with the infectious principles from *inoculated* patients, than when it naturally prevails, or the same number of people received it in the natural way.

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The most plausible objector on this account is Dr Raft, of Lyons, in France. From his review of the bills of mortality in and about London, he observes, "that more have died by the small-pox in London, since the introduction of *inoculation*, than in the same time preceding that period, in consequence of the disease thereby being more universally extended and propagated." But to this, Dr Lettsom most satisfactorily replies, "That the late increase of burials cannot depend upon the practice of *inoculation*, under which, though it is a rare thing to hear of a fatal case, but rather upon the innovation introduced in the treatment of the natural small-pox of exposing the patients to the open air, and a less reserved intercourse amongst the community. Add to this the improvements in medicine in various instances, the police of the city, &c. which by preserving many lives occasion more subjects for the small-pox, and consequently a proportional increase of deaths by this disease, many of those who are preserved by the above named improvements not being favoured with the advantage of *inoculation*. Besides the care taken in and about London to prevent inconvenience from *inoculation*, &c. it should be remembered, that the increasing accession of young persons to the capital from the country, easily accounts for the increase of 19 deaths in 1000 more than formerly happened." See a Defence of *Inoculation*, in Dr Lettsom's *Medical Memoirs*.

XII. "The practice of *inoculation* comes from the devil."

The best answers to this seem to be, first, that cavillers will never cease from objecting; and oppositions will be made as long as there are men of wit to devise, or of sophistry to invent. Secondly, that Job was afflicted by the devil with the small-pox, is not a known fact. Thirdly, that if by what is said the principal objections are removed, it is hoped that the reasonable and the religious will be enabled to approve themselves to God in the practice of *inoculation*. See a discussion of most of the preceding objections in an excellent pamphlet, entitled, "*Inoculation* impartially considered, and proved to be consistent with Reason and Revelation," by the Rev. Mr David Some, published by Dr. Doddridge in 1750.

Advantages of INOCULATION. Though no disease, after it is formed, baffles the powers of medicine more than the small-pox, yet more may be done before-hand to render this disease favourable than in any other we know. The artificial method of producing the small-pox hath almost stripped it of its terrors; in general, hath rendered its aspect mild, its progress uniform, and nearly without hazard to the patient.

Mr Mudge, in his Dissertation on the inoculated Small-pox, enumerates the following sources of danger from this disease, viz. 1. The patient's constitution. 2. The propensity of the patient to be infected. 3. The manner or mode of the infection being communicated. 4. The constitution of the air at the time of infection. And it is the advantage of *inoculation*, if prudently conducted, almost totally to exempt its subjects from the disadvantages attendant on these sources.

1. "Respecting the habit of body, or state of the patient's constitution at the time of infection."

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Constitutional or habitual diseases, in general, do not interfere with the course of the small-pox, whether in its natural or its artificial progress; such as scorbutic eruptions on the skin, sturuous complaints, itch, scabby eruptions, excoriated ears, &c. The variolous poison is therefore a thing *sui generis*, and noways affected by these taints of the juices, or what is usually called a bad habit of body; or at least so inconsiderably, as not to deprive such patients of any of the advantages of *inoculation*. But the case is much reversed with respect to some accidental diseases. *E. gr.* If on the attack of the small-pox, the habit or its attending circumstances tend to inflammation, or, on the contrary, to a putrid acrimony, the eruptive fever in these aggravated states will load the body with variolous matter, or produce pustules of a very unfavourable kind; in either of these cases (not to enumerate more) the patient will most probably be severely affected. But *inoculated* subjects may be infected when the constitution is in the best condition to combat with the disease; if either of those indispositions are attendant, or any other which usually endangers, they may soon be restrained or removed.

2. "The different degrees of propensity in the patient, at different times, to be infected."

That different quantities of matter are produced in different persons in the process of the disease, we find true in fact; and there is the strongest reason to believe, that, previous to infection, the quantity of the variolous matter, or rather that principle in the constitution which eventually produces it, ebbs and flows, is more or less vigorous at different times in the same subject, under various combinations of circumstances. The instances are not uncommon, where the patient who hath withstood at one time all the ordinary means of infection, nay, who hath industriously, but ineffectually, sought it; yet at another hath had a small-pox so malignant in appearance and effect, that the whole body hath been converted into an offensive variolous putrescence. If the degree of propensity to receive infection was always the same, it would be inconceivable that any one could pass unaffected when the small-pox became epidemic. From whatever causes, however, this propensity may arise, it is most reasonable to assert, that the increase or decrease of this principle takes place according as the small-pox is epidemic or not. During the continuance of any contagious epidemic disease, we always find that those constitutions which are most congenial with that character, are peculiarly obnoxious to the correspondent distemper. And we may reasonably conclude, that when the constitution of a person not past the small-pox is most saturated with the variolous principle, he is then more particularly subject to infection. Again, it is not only undoubted, that the variolous principle subsists in the constitutions of persons not past the small-pox, but it is more than probable that a part of this principle is produced by the eruptive fever, and the rest of the variolous process. Agreeably to what hath been said, we find, that during the epidemic tendency, those who have not passed the disease, are more open to contagion than in other constitutions of air, when the small-pox is not epidemic, and is consequently a rare disease. Many who have escaped infection from *inoculation* and other means of contagion, on removal into a situation

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where the small-pox has been epidemic, have presently after been seized with this disorder. Events of this kind are so common, as to have given rise to the ill grounded opinion, that any change of air is hazardous to those who have not had the small-pox. If at a time when the propensity to be affected is the greatest, there should be a concurrence of those states of the constitution above noticed, how aggravated will the condition of the patient be!

Respecting the evasion of these inconveniences by *inoculation*, it is to be observed, that as the propensity to the disease differs at different times in the same subject, it is reasonable to suppose that the disorder is produced by downright violence, when there subsists in the patient but little of that peculiarity of constitution so essential to the production of the disease (and so general, when the small-pox is epidemic), or, in other words, when the body is indisposed to be poisoned. This consideration, peculiar to the disease when artificially produced, appears to be the true cause of the small quantity of pocky matter, and that general scarcity of pustules, when compared to the natural small-pox, which has ever accompanied *inoculation*, and is one of the grand advantages of the discovery. Farther, as it is very reasonable to suppose, that this propensity is the greatest when there is an epidemic constitution of the air which favours the production of the disease; and if it be as probable that the severity or mildness of the disease depends in a good degree upon the greater or lesser propensity of the subject to be infected; it will certainly be an eligible step not to bring on the disorder by *inoculation* during the continuance of an evidently prevailing tendency to the disease. Prudence in this case directs us to take advantage of the absence of such a prevailing tendency, when all the benefits of *inoculation* may be secured; and not to delay the operation, till such a constitution of air prevails, as at once makes the operation necessary, and deprives it of some of its advantages. To conclude, we may add to this consideration, that by the practice of exposure to cold, the violence of the eruptive fever is so far moderated, as to prevent its forming an additional quantity of variolous matter, which, in a violent and unrestrained state, it would do, by assimilating the juices of the constitution into the nature of the variolous poison.

3. "The manner or mode of the infection being communicated."

In the natural small-pox, the disease may be produced by accidental contagion, or an epidemic influence. Dr Mead says, that the air of this climate never produces the plague, small-pox, or measles; and Dr Arbuthnot says, that the plague itself may be generated by some quality in the air, without any contagion. Be these opinions as they may, it is evident that contagion is sometimes so languid, that it requires the agency of other causes to give it activity, so as to produce the tribe of diseases to which it belongs, and which without this agency would never be brought forth; and though the strongest epidemic tendency may not in Europe create the small-pox, without the concurrence of contagious fomes, yet there is, by the agency of the former, such an alteration made, and propensity brought on the animal juices, as is essentially necessary to continue the existence of the disease.

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Various contagion produces its effects by the actual application of its poison, either externally, through the medium of the skin; or internally, to the gullet, stomach, and guts, in the act of deglutition; or lastly, to the lungs, in the act of respiration. Though there may be a possible admission of the poisonous miasmata into the constitution through the skin, from the principle of absorption; yet the poison very seldom, if ever, exerts its influence upon the habit in this manner: possibly by a local actual application of the gross matter lodged in the cloaths, or otherwise conveyed, the distemper may sometimes be produced by a kind of *inoculation*, and then the disorder will probably be favourable. But when the poison, in a more dilute state, only floats in or impregnates the air, it seldom enters the pores of the skin and poisons by way of absorption; for the degrees of activity in which this power is exerted, are most probably in proportion to the aids the constitution may stand in need of from it. However, it is more than probable that the ordinary mode of infection is by the lungs, which from their structure they are well calculated to receive, to entangle, and to retain. When either the lungs or the stomach are first infected by the infectious effluvia, it is most reasonable to believe, that these noble parts, together with the fauces, glottis, wind-pipe, and gullet, will frequently labour under a greater load of pustules than the external surface of the body: for it is observed, that when the patient is infected artificially, the parts to which the poison is applied suffer in a greater degree than the more distant; and that the circumjacent skin, to some extent, is filled with pustules. From this particular application of the morbid matter to the fauces, &c. it is probable, that the large discharge of saliva, &c. arises, which characterizes the confluent small-pox in adults; and as children swallow this saliva, it excites a diarrhoea, which in them answers to the spitting in those more aged. When the internal parts are oppressed with pustules, there is no interval between the eruptive and the subsequent symptomatic fever; and the suffering which the patient labours under from a generally inflamed skin, heightened by the diseased condition of the nobler parts, perpetuates the first fever. This informs us that all is not so well within as otherwise the external appearances might have induced us to believe; but that the nobler parts are rendered unfit for the purposes of life, at least are labouring and lagging behind in the process, so that they have not kept pace with the apparent state of the disease on the surface of the body: this some have supposed to be the true general cause of the secondary fever, under which the patient, if he sinks, dies peripneumonic. These consequences frequently attend the infection received in the natural way; and if, superadded to these, the unhappy situation of those described under the first and second sources of danger attends the patient, the disorder will be proportionably aggravated, and the chance of life lessened.

But here again *inoculation* relieves: for by this mode the virus is applied to the external surface of the body, so that the whole constitution (excepting the part immediately surrounding the wound) being affected uniformly, the process of the disease is regularly carried on; and the nobler parts not being particularly affect-

ed by a partial application of the variolous fomes to their surface, have no distress to proclaim by a secondary fever, which therefore is scarcely ever seen in *inoculated* patients.

4. "The constitution of the air at the time of infection."

A powerful source of difficulty and danger in the natural small-pox is, the malignant influence of the air at some seasons, and particularly if it happens at the time of receiving the infection. If this concurs with one or more of the other sources, how dreadful the devastation! Whether this constitution of the air produces its deleterious effects by heightening the natural malignity of the infecting poison, or acts on the constitution itself so as to render the effects of contagion more peculiarly fatal, the consequence of this state of the air is the same. The general characters of a morbid state of the air are the inflammatory and putrid; and it is uniformly observed, that whenever a person is attacked with a fever under either of these prevailing dispositions, it never fails to impress its character upon the disease.

But here also *inoculation* affords the most benign influence. The judicious practitioner does not expose his patient to the pernicious effects of an air that can stamp its baneful character on the small-pox, but chooses the season best calculated for the safety and welfare of his patient; and hence we rarely see the influence of this evil source attendant on the artificial disease.

Having seen, that from the influence of one or more of these four sources of difficulty and danger, and that from their union will result a natural small-pox, complicated with horrors not less to be dreaded than the plague; how inestimable must appear that favour of Providence, by which we are freed from the formidable attendants of this disease, viz. *inoculation*, by which the disorder is rendered mild, and in general less hazardous than a common cold!

From attention to the above sources of ill in the natural small-pox, we perceive with sufficient satisfaction the many instances of relief and security which generally we avail ourselves of by *inoculation*; a part of which we have seen, and a few others follow.

1. As already observed, it saves the lives of most who are its subjects. From a general calculation it appears, that in the hospitals for small-pox and *inoculation*, 72 die out of 400 patients having the distemper in the natural way, and only one out of this number when *inoculated*. 2. It lessens the affliction from both the degree and the number of ill symptoms, even when it proves fatal. It lessens the number of pustules; and, by moderating the virulence of the disease, the marks on the face are not so deep. 3. It is extremely rare that the secondary fever attends it; a symptom productive of much suffering, if the patient is happy enough to escape with life. 4. It produces the disease under the fewest disadvantages, and favours with foresight to prevent many ills not to be guarded against in the natural small-pox. 5. Instead of communicating other disorders with it, many disorders subsequent to the natural are very rarely observed after the artificial small-pox. 6. It effectually removes all just grounds of fear; a passion very injurious in this disease.

Inoculation.

Defec-
tion
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Inquisition.

disease. 7. Soldiers, sailors, and all who would appear abroad, or in public offices, are freed from every anxiety and hazard attendant on the natural small-pox. 8. Servants, women with children at their breasts, pregnant women, magistrates, physicians, &c. are all freed from the most distressing embarrassment, by conformity to inoculation. See MEDICINE.

INOSCULATION, in anatomy; the same with ANASTOMOSIS.

INPROMPTU, or IMPROMPTU. See IMPROMPTU.

INQUEST, in Scots law, the same with JURY.

INQUISITION, in the church of Rome, a tribunal in several Roman Catholic countries, erected by the popes for the examination and punishment of heretics.

This court was founded in the 12th century by father Dominic and his followers, who were sent by Pope Innocent III. with orders to excite the Catholic princes and people to extirpate heretics, to search into their number and quality, and to transmit a faithful account thereof to Rome. Hence they were called *inquisitors*; and this gave birth to the formidable tribunal of the inquisition, which was received in all Italy and the dominions of Spain, except the kingdom of Naples and the Low Countries.

This diabolical tribunal takes cognizance of heresy, Judaism, Mahometanism, Sodomy, and polygamy; and the people stand in so much fear of it, that parents deliver up their children, husbands their wives, and masters their servants, to its officers, without daring in the least to murmur. The prisoners are kept for a long time, till they themselves turn their own accusers, and declare the cause of their imprisonment; for they are neither told their crime nor confronted with witnesses. As soon as they are imprisoned, their friends go into mourning, and speak of them as dead, not daring to solicit their pardon, lest they should be thought in as accomplices. When there is no shadow of proof against the pretended criminal, he is discharged, after suffering the most cruel tortures, a tedious and dreadful imprisonment, and the loss of the greatest part of his effects. The sentence against the prisoners is pronounced publicly, and with extraordinary solemnity. In Portugal, they erect a theatre capable of holding 3000 persons; in which they place a rich altar, and raise seats on each side in the form of an amphitheatre. There the prisoners are placed; and over-against them is a high chair, whither they are called; one by one, to hear their doom, from one of the inquisitors.

These unhappy people know what they are to suffer by the clothes they wear that day. Those who appear in their own clothes are discharged upon payment of a fine: those who have a *santo benito*, or strait yellow coat without sleeves, charged with St Andrew's cross, have their lives, but forfeit all their effects: those who have the resemblance of flames, made of red serge, sewed upon their *santo benito*, without any cross, are pardoned, but threatened to be burnt if ever they relapse: but those who, besides these flames, have on their *santo benito* their own picture, surrounded with figures of devils, are condemned to expire in the flames. The inquisitors, who are ecclesiastics, do not pronounce the sentence of death; but form and read an act, in which they say, that

the criminal being convicted of such a crime, by his own confession, is with much reluctance delivered to the secular power to be punished according to his demerits: and this writing they give to the seven judges who attend at the right side of the altar, who immediately pass sentence. For the conclusion of this horrid scene, see ACT of Faith.

INSCRIBED, in geometry. A figure is said to be inscribed in another, when all its angles touch the side or planes of the other figure.

INSCRIPTION, a title or writing affixed to any thing, to give some farther knowledge of it, or to transmit some important truth to posterity.

Antiquaries are very curious in examining ancient inscriptions found on stones and other monuments of antiquity. Sanchoniathon, contemporary, as it is said, with Gideon, drew most of the memoirs whereof his history is composed, from inscriptions which he found in temples and on columns, both among the Heathens and the Hebrews.

It appears, indeed, that the ancients engraved upon pillars the principles of sciences, as well as the history of the world. Those mentioned by Herodotus show, that this was the first way of instructing people, and of transmitting histories and sciences to posterity. This is confirmed by Plato in his *Hippias*; wherein he says, that Pisistratus engraved on stone-pillars precepts useful for husbandmen. Pliny assures us, that the first public monuments were made of plates of lead; and that the treaties of confederacy concluded between the Romans and the Jews were written upon plates of brass; that (says he) the Jews might have something to put them in mind of the peace and confederacy concluded with the Romans. The Greeks and Romans were great dealers in inscriptions, and were extremely fond of being mentioned in them: and hence it is, that we find so many in those countries of ancient learning, that large volumes have been composed as the collection of Gruter, &c. Since Gruter's collection, Th. Reinseus has compiled another huge volume of inscriptions. M. Fabretti published another volume at Rome in 1699, wherein he has corrected abundance of errors which had escaped Gruter, Reinseus, and other antiquaries, &c. and added a great number of inscriptions omitted by them.—Since all these, Grævius has published a complete collection of inscriptions, in three volumes folio.

INSCRUTABLE, UNSEARCHABLE, in theology, is usually understood of the secrets of Providence, and the judgments of God, which cannot be found out, or into which human reason cannot penetrate.

Academy of INSCRIPTIONS. See ACADEMY.

INSECTS, *INSECTA*, in natural history, a smaller sort of animals, commonly supposed to be exsanguinous; and distinguished by certain incisures, cuttings, or indentings in their bodies. The word is originally Latin, formed of *in*, and *sec* "I cut;" the reason of which is, that in some of this tribe, as ants, the body seems to be cut or divided into two; or because the bodies of many, as worms, caterpillars, &c. are composed of different circles, or rings, which are a sort of incisures. See ZOOLOGY and ENTOMOLOGY.

Of the Kinds of INSECTS, and where the Collector for the Cabinet may find them. Insects, in general, are known to most people, the systematic distinctions but

Inscribed
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Insects.

Insects. to few; nor have we any English names for the greatest part of them. The general denominations of beetles, butterflies, moths, flies, bees, wasps, and a few other common names, are all that our language supplies. It would, therefore, be in vain to enumerate the immense variety of genera and species to any person unskilled in the science of entomology: we may, however, give directions under general names where to find each kind.

The class of insects is divided by Linnæus into seven orders. See ZOOLOGY and ENTOMOLOGY.

I. The Coleoptera kind. Many of these (as the *scarabeus* or chaffer, *dermestes* or leather-eater, *bister* or mimick-beetle, *staphylinus* or rove-beetle, &c.) are found in and under the dung of animals, especially of cows, horses, and sheep. Some (as *lucanus* or stag-beetle, *cerambyx* or capricorn beetle, *dermestes*, &c.) are found in rotten and half-decayed wood, and under the decayed bark of trees. Others (as *bister*, *silpha* or carrion-beetle, *staphylinus*, &c.) on the carcases of animals that have been dead four or five days; on moist bones that have been gnawed by dogs or other animals; on flowers having a fetid smell; and on several kinds of fungous substances, particularly the rotten and most stinking. Others (as *byrrhus*, *curculio* or weevil, *bruchus* or feed-beetle, &c.) may be found in a morning about the bottoms of perpendicular rocks and sand-banks, and also upon the flowers of trees and herbaceous plants. Many kinds (as *gyrinus* or whirl-beetle, *dytiscus* or water-beetle, &c.) may be caught in rivers, lakes, and standing pools, by means of a thread-net, with small meshes, on a round wire-hoop, fixed at the end of a long pole. In the middle of the day, when the sun shines hot, some (as the *coccinella* or lady-fly, *buprestis* or burn-cow, *chrysomela* or golden honey-beetle, *cantharis* or soft-winged-beetle, *elater* or spring-beetle, *necydalis* or clipt-winged beetle, &c.) are to be seen on plants and flowers, blighted trees and shrubs. Others (as *lampyris* or glow-worm, &c.) frequent moist meadows, and are best discovered at night, by the shining light which they emit. A great variety sit close on the leaves of plants, particularly of the burdock, elecampane, colts foot, dock, thistle, and the like, (as the *cassida* or tortoise beetle, &c.); or feed on different kinds of tender herbs (as the *meloe* or blister-beetle.) Numbers (as the *tenebrio* or stinking-beetle,) may be found in houses, dark cellars, damp pits, caves, and subterraneous passages; or on umbelliferous flowers, (as the *cerambyx*, *pinus*, &c.); or on the trunks as well as on the leaves of trees, in timber-yards, and in the holes of decayed wood. Some (as the *leptura* or wood-beetle, *cicindela* or glossy-beetle, &c.) inhabit wild commons, the margins of pools, marshes, and rivulets; and are likewise seen creeping on flags, reeds, and all kinds of water-plants. Multitudes (as the *carabus* or ground-beetle) live under stones, moss, rubbish, and wrecks near the shores of lakes and rivers. These are found also in bogs, marshes, moist places, pits, holes of the earth, and on stems of trees; and in an evening they crawl plentifully along path-ways after a shower of rain. Some (as the *forficula* or earwig) may be discovered in the hollow stems of decayed umbelliferous plants and on many sorts of flowers and fruits.

II. Hemiptera. Some of these (as the *blatta* or cock-

roach) are found about bake-houses, &c.; others (as the *mantis* or camel-cricket, *gryllus* or locust, *fulgora*, *cicada*, or flea-locust, *cimex* or bug, &c.) on grass, and all kinds of field-herbage. Some (as *natomeia* or boat-fly, *nepa* or water-scorpion, &c.) frequent rivers, lakes, and standing pools.

III. Lepidoptera. In the day, when the sun is warm, butterflies are seen on many sorts of trees, shrubs, plants, and flowers. Moths may be seen in the day-time, sitting on pales, walls, trunks of trees, in shades, out-houses, dry holes, and crevices; on fine evenings, they fly about the places they inhabit in the day-time: some (as the *sphinx* or hawk-moth) are seen flying in the day-time over the flowers of honey-suckles and other plants with tubular flowers. Insects of this species seldom sit to feed, but continue vibrating on the wing, while they thrust the tongue or proboscis into the flowers.

IV. Neuroptera. Of these, some (as the *myrmecoleon*, *bemerobius* or pearl-fly, *raphidia* or camel-fly, &c.) are found in woods, hedges, meadows, sand-banks, walls, pales, fruits, and umbelliferous flowers. Others (as *libellula* or dragon-fly, *ephemera* or may-fly, *phryganea* or spring-fly, &c.) fly about lakes and rivers in the day.

V. Hymenoptera. These, including wasps, bees, &c. frequent hedges, shrubs, flowers, and fruits.

VI. Diptera. Flies of various kinds constitute this class; of which some (as *astax* or gad-fly, *musca* or fly, *tabanus* or whame) fly about the tops of trees, little hills, horses, cows, sheep, ditches, dunghills, and every offensive object. Others (as *tipula*, *conops*, *afilus* or wasp-fly, &c.) are found on all sorts of flowers, particularly those of a fetid smell.

VII. Aptera, or those without wings, comprehend scorpions, spiders, crabs, lobsters, &c.

Of Catching and Preserving INSECTS for Collections. In the following directions, we shall relate the methods of killing them the most readily, and with the least pain, as the pursuit of this part of natural history hath been often branded with cruelty; and however reasonably the naturalist may exculpate himself by pleading the propriety of submitting to an evil which leads to useful discoveries, yet for wanton cruelty there never can be a just pretext.

1. The first class, consisting of beetles (*coleoptera*); are hard-winged. Many kinds fly about in the day, others in the evening, some at night only. They may be caught with a gauze-net, or a pair of forceps covered with gauze. When they are taken, stick a pin through the middle of one of the hard wings, and pass it through the body. They may be killed instantly, by immersion in hot water, as well as in spirit of wine; then stick them on a piece of cork, and afterwards carefully place their legs in a creeping position, and let them continue exposed to the air until all the moisture is evaporated from their bodies. Beetles may also be preserved in spirit of wine, brandy, or rum, closely corked up.

2. Insects of the second class (*hemiptera*) may be killed in the same manner as beetles, and likewise by means of a drop of the ethereal oil of turpentine applied to the head; or in the manner to be described under the next class for killing moths.

3. The division of butterflies and moths, (*lepidoptera*),

*Lettsome's
Naturalist's
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nion.*

Insects.

Insects. *ra*), as well as all flies with membranaceous wings, should be caught with a gauze net, or a pair of gauze forceps: when taken in the forceps, run a pin through the thorax or shoulders, between the forewings. After this is done, take the pin by the head, and remove the forceps, and with the other hand pinch the breast of the insect, and it will immediately die: the wings of butterflies should be expanded, and kept so by the pressure of small slips of paper for a day or two. Moths expand their wings when at rest, and they will naturally take that position.

The larger kinds of these insects will not so readily expire by this method, as by sticking them upon the bottom of a cork exactly fitted to the mouth of a bottle, into which a little sulphur had been put, and by gradually heating the bottle, till an exhalation of the sulphur take place, when the insect instantly dies, without injuring its colours or plumage.

The best method of having the most perfect butterflies is to find out, if possible, the larva or caterpillar of each, by examining the plants, shrubs, or trees, they usually feed upon, or by beating the shrubs and trees with long poles, and thereby shaking the caterpillars into a sheet spread underneath to receive them; to put them into boxes covered with thin canvas, gauze, or cat-gut, and to feed them with the fresh leaves of the tree or herb on which they are found; when they are full grown, they will go into the pupa or chrysalis state, and require then no other care till they come out perfect butterflies, at which time they may be killed, as before directed. Sometimes these insects may be found hanging to walls, pales, and branches of trees, in the chrysalis state.

Moths might likewise be procured more perfect, by collecting the caterpillars, and breeding them in the same manner as butterflies. As the larvæ or caterpillars cannot be preserved dry, nor very well kept in spirit, it would be satisfactory if exact drawings could be made of them while they are alive and perfect. It may be necessary to observe, that in breeding these kinds of insects, some earth should be put into the boxes, as likewise some rotten wood in the corners; because, when the caterpillars change into the pupa or chrysalis state, some go into the earth, and continue under ground for many months before they come out into the moth state; and some cover themselves with a hard shell, made up of small pieces of rotten wood.

4. The fourth class of insects (*neuroptera*) may be killed with spirit of wine, oil of turpentine, or by the fumes of sulphur.

5. Those of the next class (*hymenoptera*) may be killed in the same manner. A pin may be run through one of their wing-shells and body.

6. Insects of the sixth class (*diptera*) may likewise be killed by spirit, or by fumes of sulphur.

7. Those of the last division (*aptera*) are in general subjects which may be kept in spirit.

When in search of insects, we should have a box suitable to carry in the pocket, lined with cork at the bottom and top to stick them upon, until they are brought home. If this box be strongly impregnated with camphor, the insects soon become stupified, and are thereby prevented from fluttering and injuring their plumage. Besides a small forceps, the collector should have a large musquito gauze-net, and also a

pin-cushion with three or four different sizes of pins **Insects.** to suit the different sizes of insects.

In hot climates insects of every kind, but particularly the larger, are liable to be eaten by ants and other small insects; especially before they are perfectly dry: to avoid this, the piece of cork on which our insects are stuck in order to be dried, should be suspended from the ceiling of a room, by means of a slender string or thread; besmear this thread with bird-lime, or some adhesive substance, to intercept the rapacious vermin of those climes in their passage along the thread.

After our insects are properly dried, they may be placed in the cabinet or boxes where they are to remain: these boxes should be kept dry; and also made to shut very close, to prevent small insects from destroying them; the bottoms of the boxes should be covered with pitch, or green wax, over which paper may be laid; or, which is better, lined with cork, well impregnated with a solution of corrosive sublimate mercury in a saturated solution of crude sal-ammoniac in water, an ounce of which will dissolve 20 scruples of the sublimate.

The finest collections have been ruined by small insects, and it is impossible to have our cabinets too secure. Such insects as are thus attacked may be fumigated with sulphur, in the manner described for killing moths; if this prove ineffectual, they may be immersed in spirit of wine, without much injuring their fine plumage or colours, and afterwards let them be sprinkled about their bodies and insertions of the wings with the solution above mentioned. But baking the insects in an oven, in the manner described for Birds (under that article), is the most effectual method of extirpating these enemies; however, the utmost caution is requisite in this process in regulating the heat of the oven.

N. B. All kinds of insects having no wings, may be preserved in spirits, brandy, or rum; except crabs, lobsters, and the like, which may conveniently be preserved dry.

INSECTS giving Root to Plants. Of this we have an account, by Mr Fourgeroux, in the Memoirs of the Academy of Sciences for 1769. The plants, of which Mr Fourgeroux gives an account, are perfectly the reverse of the worm-plant of China, described by Mr Reaumur in the year 1726. For, in that case, a worm fixes its snout into the extremity of the plant, and derives nourishment from it. But the plants, of which an account is here given, derive their nourishment from the animals.

The greatest part of the animal-plants which he has seen, grow, he tells us, on the chrysalis of a species of cicada. The plant growing on these insects has got the generic name of *clavaria*, because its stalks and branches, when it has any, are terminated by tubercles, which give the appearance of little clubs. The root of this plant, in general, covers the body of the insect, and sometimes is even extended over its head. When these productions have for some time been preserved in spirits, the plant and animal may be separated from each other without hurting either. Small grooves, formed by the rings of the animal, may be observed running cross the roots of the plant: but no vestige can be found of the root's having any where

Insects. penetrated the body of the insect. These plants produce fibres differing in length and number. The fibres are terminated by tubercles, which, before the plant arrives at maturity, are solid; but, after that period, they are found punctured, probably by worms which have suffered a metamorphosis upon escaping from them.

According to Mr Fourgeroux, plants grow, not only on the chrysalis of the cicada, but upon the cicada itself. He saw one of this kind upon a cicada brought from Cayenne. The plant, in this case, differed from the clavaria already mentioned. It was a species of fungus, composed of long, white, silky fibres, covering the body of the insect, and extending from seven to eight lines above and below its belly.

The author has found the clavaria growing upon worms. He has found it chiefly upon worms, which, suffering a metamorphosis, become afterwards a small species of May-bug. This chrysalis, he observes, is very different from that of the cicada; and, even in its worm-state, may easily be distinguished from it.

* See *Figs.*
table FLV.

After describing these different species of animal-plants, the author next proceeds to offer his opinion upon this subject. He first considers what had been said by Dr Watson, in the *Philosophical Transactions*, concerning the vegetating-fly of the Caribbee islands*. Dr Watson's account of these flies is, that they bury themselves about the month of May, and begin to be metamorphosed in June; and that the little plant which grows upon them resembles a branch of coral, is about three inches in height, and carries small protuberances, where worms are generated, which are again converted into flies. The author imagines, that, in this account, Dr Watson has been deceived by the worms, which he has already observed will eat into the clavaria, and undergo a change in the holes which they have there made. Mr Fourgeroux is rather inclined to adopt the opinion of Dr Hill, founded upon observations made at Martinico. There the cicadae are very frequent; and, during their chrysalis state, bury themselves among dead leaves, to wait their metamorphosis. Dr Hill imagines, that the seeds of the clavaria are then attached to them, and are afterwards developed, much in the same manner as the *fungus ex pede equino* grows upon the hoofs of dead horses.

It may appear astonishing, that the clavaria should attach itself so constantly to the nymphæ of the cicada in America, as it is not observed to do so in other countries. For this Mr Fourgeroux attempts to account, from viewing the clavaria as a parasite peculiar to this species of insect; from the great number of the nymphæ of cicadae which abound in America; and from the circumstances of the climate and soil, which may render this phenomenon very common there, although it be not observed in Europe.

Insects blown from the Nose. Of this we are furnished with many accounts in the works of medical authors. The fact is confirmed by Dr Monro †, who has received at different times some of these insects from different persons. They were all of the scolopendra kind, though not exactly answering to any description of Linnaeus. One of these he received from Mr Hill surgeon in Dumfries. It was an inch and a half long; and lived some hours after it was discharged, creeping about slowly on a table. It was then put into ardent spirits, soon after which it died.

Noxious Insects: Means of destroying them; or preventing their Increase. The following remedies we find collected in the Gentleman's Magazine for October 1790.—Of these substances which have been generally observed to be efficacious in driving away or in destroying insects, mercury, and its various preparations, may be reckoned one of the most generally useful. Sulphur is also useful. Oils of all kinds have been often and deservedly recommended. Tobacco is not less remarkable for its utility. Of the application of these in order.

1. Mercury is known to kill or drive away lice from the human body; and it may probably be of equal efficacy in ridding other animals of their insects. For instance, sheep having a small quantity of mercurial ointment rubbed on their skins, on the sides, between the fore-legs and the body, it may kill or drive away the insect peculiar to them. Sulphur is recommended to be added to the mercurial ointment. Thus not only the insect peculiar to them, but also the scab, may be cured. See the *Transactions of the Society for the Encouragement of Arts*, London. Vol. VII. VIII. p. 90. In the *Transactions of the same Society*, Vol. V. VI. p. 59. Mr Ailway directed that, in the winter, the walls, frames, &c. of his green and hot houses should be well washed with the following mixture: Take of corrosive sublimate mercury four ounces, and dissolve it in two gallons of water. These houses had been greatly infested with red spiders and ants. After having been washed with the above mixture, neither were to be seen next summer. This wash may be used on old garden walls, and to the roots of fruit-trees infested with insects, if made weaker. It may destroy the tender-leaves of plants, though not the roots. This wash will effectually destroy that disagreeable insect the bug, and all other insects of a tender cuticle; and it will not in the least hurt the colour of bed furniture or hangings. Care must be taken, that the wash be applied into every crevice or folding of the furniture with a painter's brush. It will sometimes be necessary to repeat the wash, as some of the ova of bugs may remain concealed, notwithstanding the utmost care.

Some of the West India islands were much infested with large ants, which greatly hurt the sugar-canes. The remedy was, to dissolve corrosive sublimate mercury in rum, in the proportion of two drams to a pint of spirits. This solution was poured on dry powdered sugar; and when the sugar was dried, it was laid in the paths of the ants. They eat it, and were destroyed. Might not this practice be imitated, by laying sugar thus prepared on paper or pieces of thin boards near the roots of fruit-trees infested by insects, especially when the fruit is ripening? The papers or boards might be taken in during the night, or when it rained. The sugar should be coloured with indigo, or other substance, thereby to mark it as a substance to be avoided by curious idlers.

2. We are informed that a person in Philadelphia employed brimstone in the following manner. Having cleared all round the roots of trees infested with caterpillars or other insects, he strewed some flour of brimstone round the roots, and covered it with a thin sprinkling of fine mould, that it might not be blown away by the wind, yet so that the sun might operate through, and cause the brimstone to fumigate. Thus he destroyed the caterpillars. One pound he found suf-

Insects. sufficient for 200 trees. In that hot climate the sun may perhaps have that effect; but it scarcely will in this. He also employed sulphur in the following manner to drive insects from tall trees. He split the end of a pole, and put in the slit some matches, set them on fire, and held them under the parts of the trees chiefly affected. A pole thus armed, he found, would answer for three or four trees. Brimstone thus mixed with damp straw, and set on fire, for instance, in hop-ground infested with the fly, might be of use to drive away the fly.

The itch is supposed to proceed from a very small insect which nestles under the skin, and proceeds no farther into the habit; and is therefore attended with no dangerous consequences. Brimstone made into an ointment with hog-lard is a sure remedy.

Sheep are liable to an eruption on the skin, known by the name of the *scab*. The brimstone, when added to the mercurial ointment recommended for that disorder in the Transactions of the Society for the Encouragement of Arts, Vol. VII. p. 90, might perhaps render the application more efficacious and less dangerous.

3. The natives of hot countries are taught by experience, that an unctuous covering on their bodies prevents the bites of musquitoes and all gnats. The white inhabitants in such countries are not sufficiently careful in preventing the least stagnant water near their dwellings, in which the musquitoes are bred; even in the waste water thrown out they are produced. Dr Franklin, by a careful attention to this circumstance, guarded his family in Philadelphia from such insects: one day seeing a number of musquitoes in his library, he found on inquiry, that one of his servants had taken the cover off a tub placed near his window for receiving rain-water. On such an occasion the remedy is easy, viz. shutting the room up for the day, so that the musquitoes cannot come at any water, in which time they die. Though this caution may seem trifling to us who live in a mild climate, it is far otherwise in hot countries.

Oils being known to be most efficacious in destroying insects, may not the use of it be extended to the destruction of worms in the bowels of horses, where they may occasion the violent pain they seem sometimes to suffer? If the horse was for some time kept fasting, and a large quantity of oil, suppose a pint, was given, if worms are the cause, the oil may in that case kill them.

Flowers, leaves, and fruit, on plants, are known to be devoured by caterpillars. These are destroyed by oils, which close the lateral pores by which they breathe. For this purpose it is advised, that, on the approach of spring, a cloth dipped in train oil be laid on such parts of the tree in which there is the least appearance of them.

We are informed, in the Memoirs of the Society of Agriculture at Paris, that oil of turpentine, when applied to animals which were covered with insects, destroyed the insects without hurting the animal. The author tried it on several trees, mixed with fine earth so as to incorporate them well, then adding water, still stirring them carefully till the whole was brought to some degree of fluidity. In this mixture he dipped branches of fruit-trees on which there were insects, and hereby destroyed not only the eggs but also the insects,

without hurting the leaves. This composition may be got off by washing, or the first heavy shower. From these experiments the author thinks, that oil of turpentine may with equal efficacy be employed for killing various kinds of lice on domestic animals.

We are informed, in the Transactions of the Society for the Encouragement of Arts, Vol. V. p. 45, that Mr Winter, among other experiments on turnip seed, steeped the seed 24 hours in a sufficient quantity of train oil. He then drained the oil from the seed, which he mixed with a quantity of fine sifted earth, and immediately sowed it in drills. When the plants began to appear on the surface, the ground was sown with foot. He found that seed steeped in lintseed oil answered equally well. The turnips the least injured by the fly were those that grew from seed steeped as above, which grew so luxuriantly as to produce rough leaves several days prior to the most flourishing of any of his other experiments, and were the better enabled to withstand the fly's attack. The leaves of these turnips were of a darker green, and appeared twice as thick in bulk and luxuriance than the other turnips, and were a considerable deal larger. The seed was drilled an inch and a half deep, and at a foot distance in the rows. Train oil is apt to kill the leaves of plants which have been injured by insects, but lintseed oil has not that effect, though equally destructive to the insects. The train oil seems to act both as an oil, and by its disagreeable smell it prevents insects approaching it. In this respect it may be successfully used to prevent field-mice or other vermin preying on acorns, chestnuts, or other seeds steeped in it before they are sown.

When thus giving directions for preventing the fly on turnips, a late experiment should be mentioned, by the disclosing of which a person gained a considerable reward. His secret was, running a roller over the ground early in the morning, while the dew remained on the ground, on the first appearance of the fly. The dew entangled the flies so much, that they could not make their escape, and were therefore crushed to death. As the roller may leave the surface of the earth too hard, some very properly advise to fix some boughs of elder in a gate or hurdle, to be drawn over the field; and if the boughs had been before fumigated with the smoke of tobacco, or tincture of asafetida, the success would be the surer. The most certain method of preventing the hurt done by the fly is to raise the plants in a nursery, and at a proper age to transplant them, being carried to the ground in a wheelbarrow filled with manure softened with water so as to admit the plants. This method will secure their more speedy growth. In the nursery the attack of the fly may be prevented by sprinkling foot or quicklime on the ground. The utility of transplanting turnips is evident by the practice of transplanting the turnip-rooted cabbage. They who are discouraged from this practice by the expence attending it, do not reflect that the hoeing is prevented, and the plants grow the better, being set in fresh earth.

4. Before proceeding to direct the use of the last means mentioned, viz. tobacco, for destroying insects in turnips, it may be proper to mention an experiment made by Mr Green, of her majesty's flower-garden at Kew. He contrived a pair of bellows, similar to that employed in recovering people seemingly drowned. It has a cavity

Insects. cavity in the nozzle, in which some tobacco is put, with a live coal over it. The bellows being then worked, the tobacco is set on fire, and the smoke is directed to any particular spot. A lady was fond of having the mosk-rose in her dressing-room, but was prevented having it on account of the green insects which constantly adhere to that plant. To remedy this inconvenience, Mr Green had a box made large enough to contain a pot in which a plant of the mosk-rose grew. In one end of the box was a hole, to admit the nozzle of the bellows; the bellows was worked, and the smoke was received into the box. When the tobacco was consumed, the nozzle was withdrawn, and a cork being put into the hole, the box thus remained till morning, when the insects were all laid dead on the earth. Being swept off, the plant was in a state fit for a dressing room. Many plants thus infested with insects may be too large, or otherwise so placed as not to be put into a box. In this case it occurred to the writer of these observations, that being sprinkled with an infusion of tobacco in water might in some degree answer the same purpose. On trial he found it answer, and he thus freed other plants of their insects. He also used it on trees of easy access with advantage. Train oil is so inimical to tender plants or leaves, that it destroys them if insects have in the least hurt them; whereas the infusion, instead of killing the leaves, promoted a fresh vegetation.

Fruit trees often become the prey of insects. Those against a wall, or in espaliers, being easily come at, much of the mischief may be prevented by cutting off the leaves so soon as they are observed to be curled; for then fresh eggs are laid on them, probably by butterflies. If sprinkled with the infusion of tobacco, it will prevent their coming to life. After the fruit is formed, the infusion must not be used, lest the taste and smell may remain. The scissars are then the proper remedies, which ladies may employ as amusement, and may thereby present fruit to their friends of their own preserving. A lye of the ash of plants sprinkled on the leaves may have a good effect, as also on other pot-herbs, which are often the prey of caterpillars. As many insects, besides those bred on the leaves or in the walls, may destroy the fruit, the sugar with the corrosive sublimate, as already described, may be laid in the way of other insects, to all which it will prove a speedy death. Diligent inspection into their retreats is the most certain means of preventing the loss sustained by snails. Ants are prevented rising up the trees, by laying round the roots powdered chalk, or any other substance which by entangling their feet prevents their crossing it. Care should be taken to destroy their nests every where near the garden.

Hops are now become an article of so great consequence, that it deserves our particular attention. Early in its growth, when the vines begin to ascend the poles, a black fly preys on its leaves, frequently in such numbers, as, by destroying the leaves, to interrupt the vegetation, much of the food of plants being absorbed by the leaves. The infusion of tobacco destroys them, or at least drives them away so effectually, that a plant almost totally stripped of its leaves has put out fresh leaves after the use of it. If care be not taken, they will again fall on the fresh leaves. As the flies lodge on the lower side of the leaves, they are protected from

forms of rain, and therefore the infusion must be driven upwards by a forcing pump. As it is said that the expence of tobacco is too great, perhaps lime-water, or even water by itself, driven strongly against the leaves, might drive them away. The labour attending such experiments in a large plantation discourages others, without reflecting that, if such means are used early, the flies may more easily be got rid of. Free ventilation is undoubtedly beneficial to all plants; and hence perhaps the particular advantages of drilling corn in rows a little distant. If alleys somewhat larger than common were made in the plantations of hops, there might be sufficient spaces left where the alleys cross one another to admit of setting damp straw, or other materials mixed with brimstone, foot, &c. on fire. Smoke itself is said to prevent the fly; and if so, it will still act more powerfully when mixed with such materials. It has been observed in Sweden, that the hops grow naturally among heaps of stones or fragments of rocks. They therefore advise to cover the ground round their roots with stones, which will prevent the insects laying their eggs near the roots in the ground, where they lay them to be protected during the winter. The stones will also preserve moisture at the roots during the summer. A rope cannot be drawn across a plantation of hops, as it can across a field of corn, in case of mildew. Here water to wash off the clammy juice that entices and feeds insects seems to be the only remedy. The plantation being well ventilated, may at least prevent the frequency of it. The forcing pump will most effectually wash off this exudation.

Cruelty to INSECTS. It does not appear upon what principle of reason and justice it is, that mankind have founded their right over the lives of every creature that is placed in a subordinate rank of being to themselves. Whatever claim they may have in right of food and self-defence (to which ought we to add the purposes of the naturalist, explained above?) did they extend their privilege no farther than those articles would reasonably carry them, numberless beings might enjoy their lives in peace, who are now hurried out of them by the most wanton and unnecessary cruelties. It is surely difficult to discover why it should be thought less inhuman to crush to death a harmless insect, whose single offence is that he eats that food which nature has prepared for his sustenance, than it would be were we to kill any bulky creature for the same reason. There are few tempers so hardened to the impressions of humanity, as not to shudder at the thought of the latter; and yet the former is universally practised without the least check of compassion. This seems to arise from the gross error of supposing, that every creature is really in itself contemptible, which happens to be clothed with a body infinitely disproportionate to our own, not considering that *great* and *little* are merely relative terms. But the inimitable Shakespeare would teach us, that

— the poor beetle that we tread upon,
In corporal sufferance, feels a pang as great
As when a giant dies.—

And indeed there is every reason to believe that the sensations of many insects are as exquisite as those of creatures of far more enlarged dimensions, perhaps even more so. The millepede, for instance, rolls itself round.

Insects
||
Insolvent.

round upon the slightest touch, and the snail gathers in her horns upon the least approach of our hand. Are not these the strongest indications of *their* sensibility? and is it any evidence of *ours*, that we are not therefore induced to treat them with a more sympathizing tenderness?

Montaigne remarks, that there is a certain claim of kindness and benevolence which every species of creatures has a right to from us. It is to be regretted that this general maxim is not more attended to in the affair of education, and pressed home upon tender minds in its full extent and latitude. We are far, indeed, from thinking, that the early delight which children discover in tormenting flies, &c. is a mark of any *innate* cruelty of temper, because this turn may be accounted for on other principles; and it is entertaining unworthy notions of the Deity, to suppose he forms mankind with a propensity to the most detestable of all dispositions: but most certainly by being unrestrained in sports of this kind, they may acquire by habit, what they never would have learned from nature, and grow up into a confirmed inattention to every kind of suffering but their own. Accordingly the supreme court of judicature at Athens thought an instance of this sort not below its cognizance, and punished a boy for putting out the eyes of a poor bird that had unhappily fallen into his hands.

It might be of service, therefore, it should seem, in order to awaken as early as possible in children an extensive sense of humanity, to give them a view of several sorts of insects as they may be magnified by the assistance of glasses, and to show them that the same evident marks of wisdom and goodness prevail in the formation of the minutest insect, as in that of the most enormous leviathan: that they are equally furnished with whatever is necessary, not only to the preservation, but the happiness of their beings in that class of existence to which Providence has assigned them: in a word, that the whole construction of their respective organs distinctly proclaims them the objects of the divine benevolence, and therefore that they justly ought to be so of ours.

INSERTION, in anatomy, the close conjunction of the vessels, tendons, fibres, and membranes of the body with some other parts.

INSINUATION denotes a cunning and covert way of creeping into any person's favour.

INSINUATION of a Will, among Civilians, is the first production of it, or the leaving it with the register, in order to its probate. See WILL.

INSIPID, TASTELESS, that which has nothing in it pungent enough to affect the palate, tongue, &c. and to occasion that sensation we call *tasting*.

INSITION, INSTITO, in botany, denotes the same with engrafting; viz. the act of inserting and uniting a cyon, bud, or the like, in the substance of the stock.

INSOLATION, in pharmacy, a method of preparing certain fruits, drugs, &c. by exposing them to the heat of the sun's rays; either to dry, to mature, or to sharpen them; as is done in vinegar, figs, &c.—The word comes from the Latin verb *insolare*, which is used by Pliny and Columella, and signifies to *expose to the sun*.

INSOLVENT, a term applied to such persons as have not wherewithal to pay their just debts. A per-

son dying, and not leaving estate sufficient to discharge these, is said to die insolvent.

Trial by INSPECTION, or EXAMINATION, is when, for the greater expedition of a cause, in some point or issue, being either the principal question, or arising collaterally out of it, but being evidently the object of sense, the judges of the court, upon the testimony of their own senses, shall decide the point in dispute. For, where the affirmative or negative of a question is matter of such obvious determination, it is not thought necessary to summon a jury to decide it; who are properly called in to inform the conscience of the court of dubious facts: and therefore, when the fact, from its nature, must be evident to the court either from ocular demonstration or other irrefragable proof, there the law departs from its usual resort, the verdict of 12 men, and relies on the judgment of the court alone. As in case of a suit to reverse a fine for non-age of the cognizor, or to set aside a statute or recognizance entered into by an infant; here, and in other cases of the like sort, a writ shall issue to the sheriff, commanding him that he constrain the said party to appear, that it may be ascertained by the view of his body by the king's justices, whether he be of full age or not: *Ut per aspectum corporis sui constare poterit justiciariis nostris, si prædictus an sit plena ætatis necne*. If, however, the court has, upon inspection, any doubt of the age of the party (as may frequently be the case), it may proceed to take proofs of the part; and particularly may examine the infant himself upon an oath of *voir dire, veritatem dicere*; that is, to make true answers to such questions as the court shall demand of him: or the court may examine his mother, his godfather, or the like.

INSPECTOR, a person to whom the care and conduct of any work is committed.

INSPECTORS, in the Roman law, were such persons as examined the quality and value of lands and effects, in order to the adjusting or proportioning taxes and impositions to every man's estate.

The Jews also have an officer, in their synagogue, whom they call *inspector*, *m baxen*. His business consists principally in inspecting or overlooking the prayers and lessons, in preparing and showing them to the reader, and in standing by him to see he reads right; and, if he makes mistakes, he is to correct him.

INSPIRATION, among divines, &c. implies the conveying of certain extraordinary and supernatural notices or motions into the soul, or it denotes any supernatural influence of God upon the mind of a rational creature, whereby he is formed to any degree of intellectual improvements, to which he could not, or would not, in fact have attained in his present circumstances in a natural way. Thus the prophets are said to have spoken by divine inspiration.

Some authors reduce the inspiration of the sacred writers to a particular care of Providence, which prevented anything they had said from failing or coming to nought; maintaining, that they never were really inspired either with knowledge or expression.

According to M. Simon, inspiration is no more than a direction of the Holy Spirit, which never permitted the sacred writers to be mistaken.

It is a common opinion, that the inspiration of the Holy Spirit regards only the matter, not the style or

Inspiration
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Inspiration.

Inspiration. words; and this seems to fall in with M. Simon's doctrine of direction.

Theological writers have enumerated several kinds of inspiration: such as an inspiration of superintendency, in which God does so influence and direct the mind of any person, as to keep him more secure from error in some various and complex discourse, than he would have been merely by the use of his natural faculties; plenary superintendent inspiration, which excludes any mixture of error at all from the performance so superintended; inspiration of elevation, where the faculties act in a regular, and, as it seems, in a common manner, yet are raised to an extraordinary degree, so that the composure shall, upon the whole, have more of the true sublime or pathetic, than natural genius could have given; and inspiration of suggestion, when the use of the faculties is superseded, and God does, as it were, speak directly to the mind, making such discoveries to it as it could not otherwise have obtained, and dictating the very words in which such discoveries are to be communicated, if they are designed as a message to others. It is generally allowed that the New Testament was written by a superintendent inspiration; for without this the discourses and doctrines of Christ could not have been faithfully recorded by the evangelists and apostles; nor could they have assumed the authority of speaking the words of Christ, and evinced this authority by the actual exercise of miraculous powers: and besides, the sacred writings bear many obvious internal marks of their divine original, in the excellence of their doctrines, the spirituality and elevation of their design, the majesty and simplicity of their style, the agreement of their various parts, and their efficacy on mankind; to which may be added, that there has been in the Christian church, from its earliest ages, a constant tradition, that the sacred books were written by the extraordinary assistance of the spirit, which must at least amount to superintendent inspiration. But it has been controverted whether this inspiration extended to every minute circumstance in their writings, so as to be in the most absolute sense plenary. Jerom, Grotius, Erasmus, Episcopius, and many others, maintain that it was not; whilst others contend, that the emphatical manner in which our Lord speaks of the agency of the spirit upon them, and in which they themselves speak of their own writings, will justify our believing that their inspiration was plenary, unless there be very convincing evidence brought on the other side to prove that it was not: and if we allow, it is said, that there were some errors in the New Testament, as it came from the hands of the apostles, there may be great danger of subverting the main purpose and design of it; since there will be endless room to debate the importance both of facts and doctrines.

Among the Heathens, the priests and priestesses were said to be divinely inspired, when they gave oracles.—The poets also laid claim to it; and to this end they always invoked Apollo and the Muses at the beginning of any great work.

INSPIRATION, in phycic, is understood of that action of the breast, by which the air is admitted within the lungs; in which sense, inspiration is a branch of respiration, and stands opposed to *EXPIRATION*.

This admission of the air depends immediately on its spring or elasticity, at the time when the cavity of the breast is enlarged by the elevation of the thorax and abdomen, and particularly by the motion of the diaphragm downwards: so that the air does not enter the lungs, because they are dilated; but those dilate, because the air enters within them. Nor is it the dilatation of the breast which draws in the air, as is commonly thought, though this is a condition absolutely necessary to inspiration; but an actual intrusion of the air into the lungs. See *RESPIRATION*.

INSPISSATING, in pharmacy, an operation whereby a liquor is brought to a thicker consistence, by evaporating the thicker parts.

INSBRUCK, a city of Germany, in the circle of Austria, and capital of the county of Tyrol, received its name from the river Inn, which runs by it. It has a noble castle or palace, formerly the residence of the archdukes of the house of Austria, with a cathedral where they are buried. The houses, though built in the German taste, are rather handsomer; and the streets, though narrow, are remarkably well paved. For the defence of this city the inhabitants can place but little confidence in their fortifications, which are very trifling. They seem rather to depend on the natural fastnesses of their country; which appear indeed to form a barrier, so perfectly inaccessible to any enemy, that even the great Gustavus Adolphus, after having over-run with his victorious arms the other parts of Germany, could never make any impression upon this. It is seated in a pleasant valley, in E. Long. 11. 27. N. Lat. 47. 3.

INSTALLATION, the act of giving visible possession of an order, rank, or office, by placing in the proper seat. See *INSTALMENT*.

INSTALMENT, a settling or instating any person in a dignity. The word is derived from the Latin *in*, and *stallum*, a term used for a seat in church, in the choir, or a seat or bench in a court of justice, &c. Though Vossius is of opinion the word is of German origin.

INSTALMENT is chiefly used for the induction of a dean, prebendary, or other ecclesiastical dignitary, into the possession of his stall, or proper seat, in the cathedral church to which he belongs. This is sometimes also called *installation*.

INSTALMENT is likewise used for the ceremony, whereby the knights of the garter are placed in their rank, in the chapel of St George at Windsor.

INSTANT, a part of duration in which we perceive no succession; or it is that which takes up the time only of one idea in our minds.

INSTAURATION, the re-establishment, or restoration of a religion, a church, or the like, to its former state. The word is by some derived from the old Latin *in* and *aurum*, which signified the "stock" of things necessary for the tilling and managing of grounds; as cattle, tools, harness, &c. But the word *in* and *aurum* is only of the middle age: *instauration* is of much greater antiquity, and by some derived from *instar*, "like;" as importing a thing's being brought to its former likeness or appearance. See *RESTAURATION*.

INSTEP, in the manege, is that part of a horse's hind

¹ *Instinct.* hind leg, which reaches from the ham to the pastern-joint.

Definition. INSTINCT, a certain power or disposition of mind, by which, independent of all instruction or experience, without deliberation, and without having any end in view, animals are unerringly directed to do spontaneously (A) whatever is necessary for the preservation of the individual or the continuation of the kind. Such in the human species is the instinct of sucking exerted immediately after birth; and such in the inferior creation is the instinct by which insects invariably deposit their eggs in situations most favourable for hatching and affording nourishment to their future progeny. These operations are necessary for the preservation of the individual and the continuation of the kind; but neither the infant nor the insect knows that they are necessary: they both act without having any end in view, and act uniformly without instruction and without experience.

The actions of the inferior animals are generally directed by instinct; those of man by reason. This at least is the case with respect to men in a state of civilization: in the savage state they are probably little less the slaves of instinct than the brutes themselves. Concerning human instincts, indeed, philosophers differ widely in opinion; some maintaining that man is endowed with a greater number of instincts than any species of brutes; whilst others deny that in human nature there is any power or propensity at all which can properly be called instinctive.

This diversity of opinion may easily be traced to its source. There are not many original thinkers in the world. The greater part even of those who are called philosophers, implicitly adopt the opinions of certain masters whose authority they deem sufficient to supply the place of argument; and having chosen their respective guides, each maintains with zeal what his master taught, or is supposed to have taught. When Locke so successfully attacked the doctrine of innate ideas and innate principles of speculative truth, he was thought by many to have overturned at the same time all innate principles whatever; to have divested the human mind of every passion, affection, and instinct; and to have left in it nothing but the powers of sensation, memory, and intellect. Such, we are persuaded, was not his intention; nor is there any thing in his immortal work which, when interpreted with candour, appears to have such a tendency.

In our opinion, great part of the *Essay on Human Understanding* has been very generally misunderstood. Much of its merit, however, was soon discovered; and mankind, finding philosophy disencumbered of the bar-

barous jargon of the schools, and built upon a few self-evident principles, implicitly embraced every opinion advanced, or which they *supposed* to be advanced, by the illustrious author; especially if that opinion was contrary to any part of the scholastic system which had so long been employed to perplex the understanding and to veil absurdity. Hence arose many philosophers of eminence both at home and abroad; who maintained, as they imagined, upon the principles of Locke, that in the human mind there are no instincts, but that every thing which had been usually called by that name is resolvable into association and habit. This doctrine was attacked by Lord Shaftesbury, who introduced into the theory of mind, as faculties derived from nature, a sense of beauty, a sense of honour, and a sense of ridicule; and these he considered as the tests of speculative truth and moral rectitude. His lordship's principles were in part adopted by Mr Hutcheson of Glasgow, who published a system of moral philosophy, founded upon a sense or instinct, to which he gave the name of the *moral sense*; and the undoubted merit of his work procured him many followers.

Men generally run from one extreme to another. It being now discovered, or at least supposed, that the human mind is endowed with instinctive principles of action, a sect of philosophers soon afterwards arose, who maintained with much vehemence that it is likewise endowed with instinctive principles of belief; and who built a system of metaphysics, if such it may be called, upon a number of innate, distinct, and independent senses. The rise of this sect is well known. Berkeley and Hume had adopted Locke's doctrine respecting the origin of our ideas; and had thence deduced consequences supposed to be dangerous in themselves, but which, it was thought, could not be denied without refusing the principles from which they were inferred. The foundation of the instinctive system being thus laid, the system itself was rapidly carried to a height far beyond what seems to have been the intention of its excellent author; and reason was well nigh banished from the regions of philosophy. For such a proceeding it is not difficult to assign the cause. The instinctive scheme requires much less labour of investigation than the systems of Locke and the ancients; for upon the principles of it, when carried to its utmost extent, every phenomenon in human nature is thought to be sufficiently accounted for, by supposing it the effect of a particular instinct implanted in the mind for that very purpose. Hence in some popular works of philosophy we have a detail of so many distinct internal *senses*, that it requires no small strength of memory to retain their very names: besides the *mo-*

K k 2 *ral*

(A) As nothing is of greater importance in the philosophy of mind than accurate definitions, it may not be improper to observe, that through the whole of this article the word *spontaneous* is to be taken in the sense in which it is used in the following extracts from *Hales's Origin of Mankind*: "Many analogical motions in animals, though I cannot call them *voluntary*, yet I see them *spontaneous*: I have reason to conclude, that these are not simply *mechanical*." "The sagacities and instincts of brutes, the *spontaneousness* of many of their motions, are not explicable, without supposing some active determinate power connected to and inherent in their spirits, of a higher extraction than the bare natural modification of matter." If this be attended to, our definition of instinct will be found perfectly consonant to that which has been given by the author of *Ancient Metaphysics*. "Instinct (he says) is a determination given by Almighty Wisdom to the mind of the brute, to act in such or such a way, upon such or such an occasion, without intelligence, without knowledge of good or ill, and without knowing for what end or purpose he acts."

² Different opinions respecting human instincts.

³ The cause of that difference.

Instinct. *ral sense*, we have the sense of *beauty*, the sense of *deformity*, the sense of *honour*, the *boarding* sense, and a thousand others which it is needless here to mention.

This new system, which converts the philosophy of mind into mere history, or rather into a collection of facts and anecdotes, though it has made a rapid progress, is not yet universally received. It has been opposed by many speculative men, and by none with greater skill than Dr Priestley; who maintains, with the earliest admirers of Locke, that we have from nature no innate sense of truth, nor any instinctive principle of action; that even the action of sucking in new-born infants is to be accounted for upon principles of mechanism; and that the desire of the sexes is merely association.

Instinct 4
confounded
with reason
and with
mechanism.

Whilst men, eminent for candour as well as for science, have thus been disputing the limits between instinct and reason in the human mind, and endeavouring to ascertain the actions which result from each, two writers of name, treating of that subject, have lately advanced opinions, which, if admitted as just, must render the dispute henceforth ridiculous, and put an end for ever to all moral inquiries. Mr Smellie, in a work which he calls *The Philosophy of Natural History*, affirms, that between *instinctive* and *rational motives* no distinction exists, but that the reasoning faculty itself is the necessary result of instinct; and Dr Reid, in his *Essays on the Active Powers of Man*, by attributing to *instinct* the action of breathing, seems to confound that principle with mere mechanism.

These three 5
principles
accurately
distinguish-
ed from
each other.

That reason, instinct, and mechanism, are all essentially different from one another, has hitherto been universally allowed; and it appears not to be a task of much difficulty to point out in what respect each of them differs from the other two. Actions performed with a view to accomplish a certain end are called *rational* actions, and the end in view is the *motive* to their performance. *Instinctive* actions have a *cause*, viz. the internal impulse by which they are spontaneously performed; but they cannot be said to have a *motive*, because they are not done with any *view to consequences*. Actions *automatic* have likewise a *cause*; but that cause is not internal impulse, but *mere mechanism*, by which they are performed without any spontaneity of the agent. Thus, a man gives charity in order to relieve a person from want; he performs a grateful action as

a duty incumbent on him; and he fights for his country in order to repel its enemies. Each of these actions is performed from a *motive*, and therefore they are all *rational* actions. An infant is impelled to suck the breast, but he knows not that it is necessary for his preservation; a couple of young savages go together, for the first time, without any view to offspring or any *determinate* idea of enjoyment. These actions have *no motive*, and therefore are not rational: but as they are performed by a *spontaneous exertion* of the agents, they are not to be attributed to mere mechanism; they are therefore *instinctive* actions. A man breathes without any motive, without any spontaneous exertion of his own, and that as well when he is asleep as when he is awake. The action of breathing therefore is neither rational nor instinctive, but merely *automatic* or *mechanical*. All this seems to be very plain. To talk of the motives of actions performed by instinct, in an argument intended to prove that between reason and instinct there is no difference, is either to beg the question or to pervert language. If the author of the *Philosophy of Natural History* chooses to call the *impulse* which prompts the infant to suck by the name of *motive*, he only uses an English word improperly; if it be his intention to affirm that such a motive is not totally and essentially different from that which prompts a man to give charity or to fight for his country, he affirms what all mankind know to be false (B).

Having thus ascertained what we mean by instinct, we shall now proceed to inquire, Whether or not there be any instinctive principles in man? But in order to proceed upon sure grounds, it will be proper to consider, in the first place, such actions of the inferior animals as are *generally* allowed to be instinctive: for an attempt has lately been made to prove, that even these actions are the offspring of reason influenced by motives; and that *instinct*, as we have defined it, is a mere imaginary principle, which has no existence either in man or brute.

It has been said that caterpillars, when shaken off a tree in every direction, instantly turn round towards the trunk and climb up, though they had never formerly been on the surface of the ground. This is a striking instance of instinct. On the tree, and not upon the ground, the caterpillar finds its food. If therefore it did not turn and climb up the trunk, it would

(B) The author of *Ancient Metaphysics*, whose learned work contains more good sense on this subject than any other book which we have seen, thus distinguishes between reason and instinct: "With respect to the mere animal, it is evident, that he pursues nothing but what is conducive either to the preservation of the animal life or to the continuation of the kind. On the other hand, the object which the intellectual mind pursues, is the *fair* and the *handsome*; and its happiness consists in the contemplation of these. And though it pursue also what is *useful* and *profitable* for the being and well-being of the animal life, yet it is for the sake, not of the animal life itself, but of the *το καλον* or *beautiful*; which therefore is the ultimate object of its pursuit in all things.

"Another material difference in practice betwixt the animal and intellectual mind is, that every action of intellect proceeds from an opinion formed concerning what is good or ill, beautiful or the contrary, in the action. When we do so, we are said to act from *will*, which is always determined by some opinion formed of the kind I have mentioned: whereas, when we act from mere appetite or inclination, without deliberation or opinion formed, we act as the brute does always; for he has no *will*, but is prompted to action by natural impulse, or *ορμη*, as the Greeks call it.

"A third very material difference is, that intellect, in all its operations, proposes ends, and devises means to accomplish these ends; whereas the instinct of the brute proceeds without consideration either of ends or means."

Instinct. would inevitably perish: but surely the caterpillar knows not that such an exertion is necessary to its preservation; and therefore it acts not from motives, but from blind impulse. The bee and the beaver are endowed with an instinct which has the appearance of foresight. They build magazines, and fill them with provisions; but the foresight is not theirs. Neither bees nor beavers know any thing of futurity. The solitary wasp digs holes in the sand, in each of which she deposits an egg. Though she certainly knows not that an animal is to proceed from that egg, and still less if possible that this animal must be nourished with other animals, she collects a few small green worms, which she rolls up in a circular form, and fixes in the hole in such a manner that they cannot move. When the wasp-worm is hatched, it is amply stored with the food which nature has destined for its support. The green worms are devoured in succession; and the number deposited is exactly proportioned to the time necessary for the growth and transformation of the wasp-worm into a fly; when it issues from the hole, and is capable of procuring its own nourishment. This instinct of the parent wasp is the more remarkable, that she feeds not upon flesh herself. Birds of the same species, unless when restrained by peculiar circumstances, uniformly build their nests of the same materials, and in the same form and situation, though they inhabit very different climates; and the form and situation are always exactly suited to their nature, and calculated to afford them shelter and protection. When danger, or any other circumstance peculiar to certain countries, renders a deviation from the common form or situation of nests necessary, that deviation is made in an equal degree, and in the very same manner, by all the birds of one species; and it is never found to extend beyond the limits of the country where alone it can serve any good purpose. When removed by necessity from their eggs, birds return to them with haste and anxiety, and shift them so as to heat them equally; and it is worthy of observation, that their haste to return is always in proportion to the cold of the climate. But do birds reason, and all of the same species reason equally well, upon the nature and extent of danger, and upon the means by which it can best be avoided? Have birds any notion of equality, or do they know that heat is necessary for incubation? No: in all these operations men recognise the intentions of nature; but they are hid from the animals themselves, and therefore cannot operate upon them as motives.

Of the instinct of animals we shall give one instance more in the elegant and perspicuous language of Dr Reid. "Every manufacturing art among men (says that able writer) was invented by some man, improved by others, and brought to perfection by time and experience. Men learn to work in it by long practice, which produces a habit. The arts of men vary in every age and in every nation, and are found only in those men who have been taught them. The manufactures of animals differ from those of men in many striking particulars. No animal of the species can claim the invention; no animal ever introduced any new improvement, or any variation from the former practice; every one of the species has equal skill from the beginning, without teaching, without experience, and

without habit; every one has its art by a kind of inspiration. I do not mean that it is inspired with the principles or rules of the art, but with the ability of working in it to perfection, without any knowledge of its principles, rules, or end. The work of every animal is indeed like the works of nature, perfect in its kind, and can bear the most critical examination of the mechanic or the mathematician, of which a honey-comb is a striking instance.

"Bees, it is well known, construct their combs with small cells on both sides, fit both for holding their store of honey and for rearing their young. There are only three possible figures of the cells, which can make them all equal and similar, without any useless interstices. These are the equilateral triangle, the square, and the regular hexagon. Of the three, the hexagon is the most proper, both for convenience and strength. Bees, as if they knew this, make their cells regular hexagons. As the combs have cells on both sides, the cells may either be exactly opposite, having partition against partition, or the bottom of a cell may rest upon the partitions between the cells on the other side, which will serve as a buttress to strengthen it. The last way is the best for strength; accordingly the bottom of each cell rests against the point where three partitions meet on the other side, which gives it all the strength possible. The bottom of a cell may either be one plane, perpendicular to the side partitions; or it may be composed of several planes, meeting in a solid angle in the middle point. It is only in one of these two ways that all the cells can be similar without losing room. And for the same intention, the planes, of which the bottom is composed, if there be more than one, must be three in number, and neither more nor fewer. It has been demonstrated, that by making the bottoms of the cells to consist of three planes meeting in a point, there is a saving of material and labour no way inconsiderable. The bees, as if acquainted with these principles of solid geometry, follow them most accurately; the bottom of each cell being composed of three planes, which make obtuse angles with the side partitions and with one another, and meet in a point in the middle of the bottom; the three angles of this bottom being supported by three partitions on the other side of the comb, and the point of it by the common intersection of these three partitions. One instance more of the mathematical skill displayed in the structure of a honey-comb deserves to be mentioned. It is a curious mathematical problem, *at what precise angle* the three planes which compose the bottom of a cell ought to meet, in order to make the greatest possible saving of material and labour. This is one of those problems belonging to the higher parts of mathematics, which are called problems of *maxima* and *minima*. The celebrated *M. L'aurin* resolved it by a fluxionary calculation, which is to be found in the Transactions of the Royal Society of London, and determined precisely the angle required. Upon the most exact mensuration which the subject could admit, he afterwards found, that it is the very angle in which the three planes in the bottom of the cell of a honey-comb do actually meet.

"Shall we ask here, Who taught the bees the properties of solids, and to resolve problems of *maxima* and *minima*? If a honey-comb were a work of human art, every

Remarkable instance in the bee.

Instinct. every man of common sense would conclude, without hesitation, that he who invented the construction must have understood the principles on which it was constructed. We need not say that bees know none of these things. They work most geometrically without any knowledge of geometry; somewhat like a child, who by turning the handle of an organ makes good music without any knowledge of music. The art is not in the child, but in him who made the organ. In like manner, when a bee makes its combs so geometrically, the geometry is not in the bee, but in that Great Geometrician who made the bee, and made all things in number, weight, and measure."

8
Which cannot be confounded with the operations of reason.

We have given a full detail of the structure of a honey-comb, because it is an effect of instinct which cannot be confounded with the operations of reason. The author of *The Natural History of Animals*, justly offended with that theory which treats of *instinctive motives*, which represents the human mind as a *bundle* of instincts, and of which the object seems to be to degrade mankind to the level of brutes, has very laudably exerted his endeavours to detect its weakness, and to expose it to contempt. But in avoiding one extreme, he seems to have run into the other; and whilst he maintains the rights of his own species, he almost raises the brutes to the rank of men. "It is better (he says) to share our rights with others than to be entirely deprived of them." This is certainly true; and no good man will hesitate to prefer his theory to that of his antagonist: but we see no necessity for adopting either; the phenomena may be accounted for without degrading reason to the level of instinct, or elevating instinct to the dignity of reason.

We shall readily allow to Locke (c), that some of the inferior animals seem to have perceptions of particular truths, and within very narrow limits the faculty of reason: but we see no ground to suppose that their natural operations are performed with a view to consequences; and therefore cannot persuade ourselves, with this historian of theirs, that these operations are the result of a train of reasoning in the mind of the animal.

Instinct.
9
On some occasions the inferior animals reason; but they perform their natural operations by instinct.

He acknowledges indeed, that their reasoning and thinking powers are remarkably deficient when compared with those of men; that they cannot take so full a review of the past, nor look forward with so penetrating an eye to the future; that they do not accumulate observation upon observation, or add the experience of one generation to that of another; that their manners do not vary nor their customs fluctuate like ours; and that, their arts always remain the same, without degeneracy and without improvement. "The crow (he observes) always builds its nest in the same way; every hen treats her young with the same measure of affection; even the dog, the horse, and the sagacious elephant, seem to act rather mechanically than with design. From such hasty observations as these, it has been inferred (he says), that the brutes are directed in their actions by some mysterious influence, which impels them to employ their powers unintentionally in performing actions beneficial to themselves, and suitable to their nature and circumstances."

And are these observations indeed hasty? and is this inference ill founded? To us the matter appears quite otherwise. If the arts of brutes and other animals have

(c) "For if they have any ideas at all, and are not mere machines, as some would have them, we cannot deny them to have some reason. It seems as evident to me, that some of them do, in certain instances, reason, as that they have sense; but it is only in particular ideas, just as they received them from the senses. They are the best of them tied up within those narrow bounds, and have not, as I think, the faculty to enlarge them by any kind of abstraction." *Essay on Human Understanding*, Book II. chap. 11.

This is in part a just observation, and serves to account for many phenomena which later writers have derived from instinct. The author of *The Philosophy of Natural History* had "a cat that frequented a closet, the door of which was fastened by a common iron latch. A window was situated near the door. When the door was shut, the cat gave herself no uneasiness. As soon as she tired of her confinement, she mounted on the sole of the window, and with her paw dexterously lifted the latch and came out." This practice, which we are told continued for years, must have been the consequence of what Locke calls reasoning in particular ideas. It could not be the effect of instinct; for instinct is adapted only to a state of nature, in which cats have neither latches to lift nor doors to open; and as it is not said that the animal attempted to lift the latches of other doors, we are not authorised to infer that this particular action was the consequence of reasoning in ideas enlarged by abstraction: the cat had repeatedly seen one door opened by an exertion which she was capable of imitating. Yet that animals have no power of enlarging their ideas, is a position, of the truth of which, though it is advanced by Locke, we are by no means confident. It is well known that crows feed upon several kinds of shell-fish when within their reach; and that they contrive to break the shell by raising the fish to a great height, and letting it drop upon a stone or a rock. This may perhaps be considered as pure instinct directing the animal to the proper means of acquiring its food. But what is to be thought of the following fact, which was communicated to us by a gentleman whose veracity is unquestioned, and who, being totally unacquainted with the theories of philosophers, has of course no favourite hypothesis to support? In the spring of the year 1791, a pair of crows made their nest in a tree, of which there are several planted round his garden; and in his morning-walks he had often been amused by witnessing furious combats between them and a cat. One morning the battle raged more fiercely than usual, till at last the cat gave way and took shelter under a hedge, as if to wait a more favourable opportunity of retreating to the house. The crows continued for a short time to make a threatening noise; but perceiving that on the ground they could do nothing more than threaten, one of them lifted a stone from the middle of the garden and perched with it on a tree planted in the hedge, where she sat watching the motions of the enemy of her young. As the cat crept

along

^{Instinct.} have always remained the same without degeneracy, and without improvement; and if they be at the same time the result of reasoning; they must either be so perfect that they cannot be improved, or so imperfect that they cannot degenerate. That the structure of a honey-comb is imperfect, no man has ever imagined. We have seen, that, as far as we are capable of discerning the end which it is intended to serve, it is the most perfect structure possible: and therefore, if it be the result of the reasoning of the bee, the author must retract his assertion respecting the extent of the reasoning and thinking powers of inferior animals; and instead of saying that they are remarkably deficient when compared with those of men, affirm that they are infinitely more perfect. No human art has yet arrived at such perfection as that it might not be improved; no architect has ever built a town, or constructed a magazine, which he could mathematically demonstrate to be of the very best possible form for the end intended, and so absolutely perfect as to be incapable of improvement.

TO
The last
mentioned
portion
controversy-
ed.

But the same author proceeds to affirm, that "the laws of analogical reasoning do not justify the idea that the brutes act, on any occasion, absolutely without design." Nay, he says, it seems more probable, "that the inferior animals, even in those instances in which we cannot distinguish the motives which actuate them, or the views with which they proceed, yet act with design, and extend their views, if not a great way, yet at least a certain length forward; than that they can be upon any occasion, such as in rearing of their young, building nests, &c. actuated merely by feeling, or over-ruled by some mysterious influence, under which they are nothing but insensible instruments." This last phrase is ambiguous. If by insensible instruments it be meant that the brutes are considered by the advocates for instinct as mere machines without the faculties of sensation and spontaneity, the author is combating a phantom of his own creation; for we believe an opinion so absurd is not now maintained by any man, (see BRUTE). But if by insensible instruments be meant such instruments as act spontaneously without being conscious of the end to which their actions lead, he appears not only to be egregiously mistaken in his conjecture respecting the design of brutes, but also to have advanced an hypothesis contradictory and inconsistent.

If it be true, that the inferior animals act with design, even in those instances in which we cannot dis-

tinguish their motives, their views may indeed extend but a little way when compared with infinity: but certainly they extend farther than ours; for there is no useful work of man constructed with such skill, but that, after it is finished, another man of equal education will be able to distinguish the general design of the artist. But if the inferior animals, on all occasions, act with design, we should be glad to know the design of the bees in forming the cells of their combs in the manner which we have so largely described. Do these little animals indeed know that a comb, consisting on both sides of hexagonal cells, with the bottom of each composed of several planes meeting in a certain solid angle, and so formed as that the bottom of a cell on the one side shall rest upon the partitions between the cells on the other side, is in all respects the most proper both for holding their stores of honey and for rearing their young? And do they likewise know, that its excellence arises from the precise figure and position of the cells, by which there is a very considerable saving of labour and materials, whilst the comb at the same time has the greatest possible strength, and the greatest possible capaciousness? If they know all this, and act with a view to these ends, it must indeed be confessed, that bees are rational creatures, and that their thinking and reasoning powers far surpass those of men; for they have from the earliest ages made discoveries in the higher mathematics, which there is reason to believe were altogether unknown to the human race till the beginning of the present century, and which at this moment are beyond the comprehension of nine-tenths of mankind in the most enlightened nation on earth. If this be a conclusion too absurd to be admitted, there is no other alternative, but either to suppose that by this artificial structure of their cells the bees have some other end in view, which we cannot distinguish; or to acknowledge, that they are over-ruled by some mysterious influence, under which they are nothing but spontaneous agents, unconscious of the end to which their operations tend. Which of these conclusions is the most rational, we will not offer such an insult to the understanding of our readers, as to suppose the meanest of them capable of entertaining a doubt. That a honey-comb is constructed with design, we most readily admit; but the design is not in the bees, but in the Creator of the bees, who directs their operations to their own good, by what the author with great propriety terms a mysterious influence (D).

^{Instinct.}
Maintain-
ed, and

But he thinks it an unanswerable argument in sup-²¹ An object
portion to it.

along under the hedge, the crow accompanied her by flying from branch to branch and from tree to tree; and when at last she ventured to quit her hiding-place, the crow, leaving the trees and hovering over her in the air, let the stone drop from on high on her back. That the crow on this occasion reasoned, is self-evident; and it seems to be little less evident, that the ideas employed in her reasoning were enlarged beyond those which she had received from her senses. By her senses she may have perceived, that the shell of a fish is broken by a fall; but could her senses inform her, that a cat would be wounded or driven off the field by the fall of a stone? No; from the effect of the one fall preserved in her memory, she must have inferred the other by her power of reasoning.

(D) Though this way of acting is undoubtedly mysterious, "yet it should not appear extraordinary even to a man who is not a philosopher, as we see examples of it daily in our own species: For a man under the direction of another of superior understanding, will use means to accomplish an end, without having any idea of either; and indeed in my opinion, by far the greater part of mankind are destined by God and nature to be governed in that way." *Ancient Metaphysics*, Vol. III. p. 352.

^{Instinct.} port of his theory, that in the performance of those actions, in which animals are said to be guided by unerring instinct, different individuals display different modes of conduct; and in his opinion, to talk of instinctive principles which admit of improvement, and accommodate themselves to circumstances, is merely to introduce new terms into the language of philosophy; for he affirms, that no such improvement or accommodation to circumstances can ever take place without a comparison of ideas, and a deduction of inferences. It is probable, that the author here alludes to those animals which, in their most important operations, are known to act differently in different countries. Thus the ostrich in Senegal, where the heat is excessive, neglects her eggs during the day, but sits upon them in the night. At the Cape of Good Hope, however, where the degree of heat is less, the ostrich, like other birds, sits upon her eggs both day and night. In countries infested with monkeys, many birds, which in other climates build in bushes and clefts of trees, suspend their nests upon slender twigs, and thus elude the rapacity of their enemies.

¹³
Obviated.

It may be thought, that a determination of the mind of the brute to act so variously upon different occasions, can hardly be conceived without judgment or intelligence. But before our author had so confidently affirmed that such accommodation to circumstances can never take place without a comparison of ideas and a deduction of inferences, he would have done well to consider how nature acts in other organized bodies, such as the vegetable. We see that a vegetable, reared in the corner of a dark cellar, will bend itself towards the light which comes in at the window; and if it be made to grow in a flower-pot, with its head downwards, it will turn itself into the natural position of a plant. Can it be supposed, that the plant, in either case, does what it does from any judgment or opinion that it is best, and not from a necessary determination of its nature? But, further, to take the case of bodies unorganized, how shall we account for the phenomena which chemistry exhibits to us? When one body unites with another, and then, upon a third being presented to it, quits the first, and unites itself with it, shall we suppose that this preference proceeds from any predilection or opinion that it is better to cleave to the one than to the other, from any comparison of ideas or deduction of inferences? Or shall we not rather say, that it proceeds from an original law of nature impressed upon it by that Being who mediately or immediately directs every motion of every the minutest atom in the universe? And if so, why may not instinct be an original determination of the mind of the animal, of which it is part of the nature or essence to accommodate itself to certain circumstances, on which depends the preservation of the individual, or the continuation of the kind? Indeed it cannot be otherwise, if we have defined instinct properly; for no man ever supposed, that when animals work instinctively, they act for no purpose. It is only affirmed that the purpose is not known to them. It is known, however, to the Author of instinct; who knows likewise that the same purpose must in different climates be promoted by different means, and who accordingly determines the operations of animals of the same species to be different under different circumstances.

N^o 167.

But though we cannot agree with this author when he affirms that no accommodation to circumstances can ever take place without a comparison of ideas, we readily admit that no faculty which is capable of improvement by observation and experience can in propriety of speech be termed instinct. ^{Instinct.} Instinct being a positive determination given to the minds of animals by the Author of nature for certain purposes, must necessarily be perfect when viewed in connection with those purposes: and therefore to talk, as Mr Smellie does, of the *improvement* of instinct, is to perplex the understanding by a perversion of language. There is not, however, a doubt, but that reason may copy the works of instinct, and so far alter or improve them as to render them subservient to other purposes than those for which they were originally and instinctively performed. It was thus in all probability that man at first learned many of the most useful arts of life.

"Thy arts of building from the bee receive;
"Learn of the mole to plough, the worm to weave;
"Learn of the little nautilus to sail,
"Spread the thin oar, and catch the driving gale.

But the arts thus adopted by men are no longer the works of instinct, but the operations of reason influenced by motives. This is so obviously and undeniably true, that it has compelled the author last mentioned to confess, in that very section which treats of instincts improveable by experience, that "what men or brutes learn by experience, though this experience be founded on instinct, cannot with propriety be called instinctive knowledge, but knowledge derived from experience and observation. Instinct (he says) should be limited to such actions as every individual of a species exerts without the aid either of experience or imitation." This is a very just distinction between instinct and experience; but how to reconcile it with the fundamental principle of the author's theory we know not. It would certainly be a very arduous task; but it is a task from which we are happily relieved, as his theory and ours have little resemblance.

Having thus proved, we hope to the satisfaction of our readers, that there is such a principle as instinct in the inferior animals, and that it is essentially different from human reason; let us return to our own species, and inquire whether there be any occasions upon which man acts instinctively, and what those occasions are. This is a question of some difficulty, to which a complete and satisfactory answer will perhaps never be given, and to which we have not the vanity to think that such an answer will be given by us. ¹⁵ The question, Whether there be any occasions upon which man acts instinctively, is a question of some difficulty, to which a complete and satisfactory answer will perhaps never be given, and to which we have not the vanity to think that such an answer will be given by us. The principle of *association* (to be explained afterwards under the article METAPHYSICS) operates so powerfully in man, and at so early a period of life, that in many cases it seems to be impossible to distinguish the effects of habit from the operations of nature. Yet there are a few cases immediately connected with the preservation of the individual and the propagation of the kind, in which by a little attention these things may be distinguished. We have already given an instance in the sucking of a child, which we believe to be an operation performed by instinct. Dr Priestley, however, thinks differently: "The action of sucking (says he), I am confident, from my own observations, is not natural, but acquired." What observations they were which led him to this conclusion he has not told us,

Instinct. us, and we cannot imagine; but every observation which we ourselves have made, compels us to believe that an *attempt* to suck is natural to children. It has been observed by the author of the Philosophy of Natural History, that the *instinct* of sucking is not excited by any smell peculiar to the mother, to milk, or to any other substance; for that infants suck indiscriminately every thing brought into contact with their mouths. He therefore infers, that the *desire* of sucking is innate, and coeval with the appetite for air. The observation is certainly just: but a disciple of Dr Priestley's may object to the inference; for "in sucking and swallowing our food, and in many such instances, it is exceedingly probable (says the Doctor), that the actions of the muscles are originally *automatic*, having been so placed by our Maker, that at first they are stimulated and contract mechanically whenever their action is requisite." This is certainly the case with respect to the motion of the muscles in the action of breathing; and if that action be of the same kind and proceed from the very same cause with the action of sucking, and if a child never show a desire to suck but when something is brought into contact with its mouth, Dr Priestley's account of this operation appears to us much more satisfactory than that of the authors who attribute it to *instinct*.

16
Instances of
human ac-
tions un-
doubtedly
instinctive.

But the actions of breathing and sucking seem to differ essentially in several particulars. They are indeed both performed by means of air; but in the former, a child for many months exerts no spontaneous effort, whilst a spontaneous effort seems to be absolutely necessary for the performance of the latter. Of this indeed we could not be certain, were it true that infants never exhibit symptoms of a *wish* to suck but when something is actually in contact with their mouths; for the mere *act* of sucking *then* might well be supposed to be automatic and the effect of irritation: But this is not the case. A healthy and vigorous infant, within ten minutes of its birth, gives the plainest and most unequivocal evidence of a desire to suck, before any thing be brought into actual contact with its mouth. It stretches out its neck, and turns its head from side to side apparently in quest of *something*; and that the object of its pursuit is something which it may *suck*, every man may satisfy himself by a very convincing experiment. When an infant is thus stretching out its neck and moving its head, if any thing be made to touch any part of its face, the little creature will instantly turn to the object, and endeavour by quick alternate motions from side to side to seize it with its mouth, in the very same manner in which it always seizes the breast of its nurse, till taught by experience to distinguish objects by the sense of sight, when these alternate motions, being no longer useful, are no longer employed. If this be not an instance of pure *instinct*, we know not what it is. It cannot be the result of association or mechanism; for when the stretching of the neck takes place, nothing is in contact with the child's mouth, and no association which includes the act of sucking can have been formed. Associations of ideas are the consequences of simultaneous impressions frequently repeated; but when the child first declares, as plainly as it could do were it possessed of language, its wish to suck, it has not received a single impression with which that wish can possibly be associated.

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Were Dr Priestley to weigh these facts, of the truth of which we are certain, we doubt not that his well-known candor would make him retract the assertion, that *all* the actions which Dr Reid and others refer to *instinct*, are either automatic or acquired. The greater part of those actions, as well as of the apparently *instinctive* principles of belief, we have no doubt are acquired: but we are persuaded that a child sucks its nurse as a bee builds its cell, by *instinct*; for upon no other hypothesis can we account for the spontaneous efforts exerted in both these operations: and we think it no disgrace to our species, that in some few cases we should act from the same principle with the inferior creation, as nothing seems more true than that,

Reason raise o'er *instinct* as we can;
In this 'tis God that works, in that 'tis man.

We have said, that, in the savage state, the sexes go together for the first time by *instinct*. without any view to offspring, and perhaps with no *determinate* idea of enjoyment. This opinion, we believe, has been generally maintained; but it is controverted by Dr Hartley. "Here (says he) we are to observe, first, that when a general pleasurable state is introduced, either by direct impressions or by associated influences, the organs of generation must sympathize with this general state, for the same reasons as the other parts do. They must therefore be affected with vibrations in their nerves, which rise above indifference, into the limits of pleasure, from youth, health, grateful aliment, the pleasures of imagination, ambition, and sympathy, or any other cause which diffuses grateful vibrations over the whole system.—Secondly, as these organs are endued with a greater degree of sensibility than the other parts, from their make, and the peculiar structure and disposition of their nerves, whatever these be, we may expect that they should be more affected by those general pleasurable states of the nervous system than the other parts.—Thirdly, the distension of the cells of the *vesiculae seminales*, and of the *sinuses* of the *uterus*, which take place about the time of puberty, must make these organs more particularly irritable then." His fourth observation respects a state widely different from that of nature, and therefore is nothing to the purpose: but his fifth is, that "the particular shame which regards the organs of generation, may, when considered as an associated circumstance, like other pains, be so far diminished as to fall within the limits of pleasure, and add considerably to the sum total."

To this excellent and able writer we may allow the truth of these observations (though some of them might certainly be controverted); and yet deny his conclusion, that "they are sufficient to account for the general desires which are observable in young persons, and that those desires are of a *fætitious* nature." For supposing every thing which he mentions to take place by mere mechanism and association; that the organs of generation are irritated, and certain cells and sinuses distended; the only inference which can be fairly drawn from such premises is, that at the age of puberty young men and women must from these causes experience certain feelings and wants which they knew not before; but surely mechanism and association cannot teach them the use of the organs of generation, or point out the only means by which their new feelings can be gratified:

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fixed:

Instinct. fied : and therefore, as we see these means invariably pursued by all animals rational and irrational, without experience and without instruction, we must refer the mutual desire of the sexes to a higher principle than mere mechanism and association ; and that principle can be nothing but instinct.

Besides these, we think the action of eating may be attributed to instinct. It is certainly performed by a spontaneous exertion of the proper organs ; and that exertion is first made at a time of life when we have no conception of the end which it serves to accomplish, and therefore cannot be influenced by motives. It must indeed be confessed, that the first act of chewing is performed by a child, not for the purpose of masticating food, but to quicken the operation of nature in the cutting of teeth : and perhaps it may be said, that the pleasing sensation of *taste*, which is then first experienced, and afterwards remembered, prompts the child to continue at intervals the exertion of chewing after all its teeth are cut ; so that though the act of eating is not performed with a *view* to the mastication of food or the nourishment of the body, it may yet be performed, not from any instinctive impulse, but merely from an early and deep-rooted association. But in answer to this it is sufficient to ask, Who taught the infant that the act of chewing would quicken the operation of nature in the cutting of teeth ? Not reason, surely, nor experience ; for an infant knows nothing of teeth or the manner in which they grow : and if it be granted, that for this purpose it was originally impelled by some internal and mysterious influence to perform the action of chewing, we are not inclined to deny that the operation may be continued for other purposes by means of association.

In human work, though laboured on with pain,
A thousand movements scarce one purpose gain ;
In God's, one single can it end produce,
Yet serves to second too some other use.

This is found philosophy confirmed by observation and daily experience : but though in the works of God, one principle produces many consequences, and though perhaps there is not a principle which falls under our cognizance more fruitful than that of association, yet if it be not sufficient to account for the *first act* of

Instinct. chewing, we cannot refer to it alone as to the source of that operation. Should it be said, that the gums of an infant are at the period of cutting teeth so irritable, that the moment any thing is applied to them the jaws perform a motion merely automatic, which we mistake for the spontaneous effect of instinct ; still we would ask, What prompts the child to apply every thing to its mouth ? Does the irritation of the gums contract the muscles of the arm ? By a bigot for mechanism this might be said, were it true that the arm of an infant, like a piece of clock-work, is always so regularly moved as to bring its hand directly into contact with its gums : but this is far from being the case ; an infant makes many unsuccessful efforts to reach its mouth, and does not accomplish its purpose till after repeated trials. Perhaps it may be alleged (for when men adopt a favourite hypothesis they will allege any thing in its support), that infants are taught to carry things to their mouths by the pleasing sensation received from the application of their nurse's breasts, and continue the practice from habit and association. But it is certain that they do not begin this practice till teeth are forming in their gums ; and then they use such things as they themselves carry to their mouths very differently from the breasts of their nurse : they constantly chew and bite their rattles, though they very seldom bite their nurses. As this practice cannot be begun from a principle of association, so it appears to us that it cannot be continued upon such a principle. Were the sensation experienced by an infant when chewing a hard substance a pleasing sensation, the remembrance of the pleasure might as a motive prompt it to repeat the operation : but it is obvious, that by pressing a gum, through which a tooth is making its way, against any thing hard, the infant must experience a painful sensation ; and therefore the influence which impels it to continue this operation, must be something more powerful than pleasure or pain (A).

These three actions, then, by which infants suck, by which they chew their food, and by which mankind are propagated, have undeniably their origin in instinct. There may be many other human actions which derive their origin from the same source (D) ; impossible but to distinguish from the effects of habit.

(A) A learned physician, to whom this article was shown in manuscript, and to whose animadversions it is indebted for great part of what merit it may possess, thinks that the pain arising from the cutting of teeth is *alleviated* by the chewing of hard substances, and that this is the cause of that inclination which infants have perpetually to chew. To give probability to an opinion which admits not of direct proof, he observes, that the violent pain in the *glans penis* occasioned by a stone in the bladder, is certainly alleviated by *rubbing* the *glans* and pulling the prepuce, which is therefore a very frequent employment of all who are afflicted with that dreadful disorder. Notwithstanding the deference which we willingly pay to the judgment of our friend, we can perceive no analogy between these two cases, which, to be of any use to his argument, ought to be not only analogous but similar. It is well known that *rubbing* the *glans penis* will almost at any time give a pleasing sensation ; and it is easy to conceive how two opposite sensations, excited at once in the same place, may counter-balance each other, so as to leave the patient equally free from pleasure and pain. But is it conceivable, that to press against a hard substance a gum in which a tooth is forming, should excite a pleasing sensation ? If it be, our friend's opinion accounts better than ours for the *continuance* of the practice of chewing ; but still it must be *instinct*, which, on either supposition, *first* directs the infant to that operation, for it cannot be *begun* either from reason or experience.

(D) The restlessness which perpetually accompanies the passage of a stone from the kidneys through the ureters, has by many been considered as the effect of instinct ; and their opinion is not without a plausible foundation. In a nephritic paroxysm, a man rises from his chair, throws himself down with violence, and rises again

Instinct. but in a state of civil society it is very difficult, if not impossible, to distinguish them from the effects of early habit (z).

18
Actions erroneously attributed to instinct.

Such, however, is the present impatience of that labour without which effects cannot be traced to their causes, that every phenomenon in human nature, which to former philosophers would have occasioned difficulty, is now thought to be sufficiently accounted for by referring it to some instinct as its particular cause; and he who can provide himself with a sufficient number of these instincts, for the reality of which he offers no proof, seats himself in the philosopher's chair, and dreams that he is dictating a system of science, whilst he is only retailing a collection of anecdotes. A philosopher of this school has lately carried the doctrine of instinctive principles so far, as to attribute the superiority of man over the other animals, chiefly to the great number of instincts with which his mind is endowed; and among these he reckons (not, we believe, as characteristic of our species in contradistinction to other animals, but as part of the instinctive bundle in the largeness of which our superiority consists) "the voiding of urine and excrement, sneezing, retraction of the muscles upon the application of any painful stimulus, the moving of the eye-lids and other parts of the body." These (he says) are effects of original instincts, and essential to the existence of young animals. With this writer instinct is sometimes represented as looking into futurity, and acting upon motives which has hitherto been considered as the province of reason and the characteristic of man: here the same instinct is confounded with irritation and mechanism; and if this mode of philosophising continue in fashion, we shall not be surprised to find men, beasts, birds, and vegetables, considered by some other writer as nothing more than different species of the same genus of beings, that are all actuated by the great and universal principle of instinct. If sneezing and the retraction of the muscles upon the application of any painful stimulus be actions of instinct, there cannot be a

doubt, upon the received principles of philosophy, but that the contraction of the leaves of the sensitive plant upon the application of any stimulus proceeds likewise from instinct: nay, a piece of leather must be endowed with instinct; for it too retracts upon the application of the painful stimulus of fire. All these are evidently similar effects produced by the same or similar causes; for in the operations of sneezing and retracting the muscles upon any painful application, there is not the least spontaneous exertion on our part, no co-operation of mind more than in the contraction of the leather and the plant. With respect to the voiding of urine and excrement, it is obvious, that at first these operations are performed without any effort of spontaneity; and that a voluntary power over the muscles which are subservient to them is very gradually acquired. Urine and excrement irritate the bladder and guts, which are supplied with branches of the same nerves that supply the abdominal muscles. But it is well known that the irritation of one branch of a nerve brings on a contraction of the muscles which are supplied by the other branches. Urine and excrement therefore are evidently expelled by the mechanical contraction of the organs of excretion: and to attribute these evacuations to *instinct*, is equally absurd as to say, that water or any other soft substance pent up in a vessel, and pressed equally on all sides, makes it escape by *instinct* through the easiest passage. It is difficult to guess what the author means by the instinctive motion of the eye-lids and other parts of the body. There is a motion of the eye-lids which is voluntary, and another which is involuntary. The former proceeds from some motive, to exclude too great a glare of light, or to guard the eye against a foreseen mischief, and is therefore the result of reason as distinguished from instinct: the latter is obviously the effect of association, which took place in early infancy and produced a habit. Infants for several days after birth do not wink with their eyes upon the approach of one's

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hand

again he knows not why. These motions are certainly performed by spontaneous exertions; and as they tend to quicken the descent of the stone, they serve the best of purposes. Yet though they are not performed with this view, and though nine-tenths of mankind know nothing of their salutary tendency, we would not be too positive that they proceed from instinct. A man suffering violent pain tries every *experiment* to procure relief; and if these incessant changes of posture be begun with any view of this kind, however indistinct, they commence from reason, and may be continued by habit. If they be begun with no view whatever, they are undoubtedly instinctive.

(z) "As intellect is latent for a considerable time in the individuals among us, and must have been latent for a very long time, perhaps for ages, among savages, it is not to be supposed that Nature, in that natural and primitive state, would leave us unprovided with what she has so bountifully bestowed upon other animals. What particular instinct man then had, it is difficult to say; but this we may be assured of, that he had all that was necessary for his being and well-being: but not so much would be necessary to him as to other animals, whose economy is more artificial than that of man, his being very simple, and much resembling that of cattle and horses. After he had acquired intellect, reason would, in some measure, supply the place of instinct: and there remains nothing now of instinct among us, except what appears in our infants before they have got the use of reason; such as their applying to the breast of the mother for nourishment. By the use of intellect, and the arts and sciences invented by us, we have formed a system of life altogether different from the natural." *Ancient Metaphysics*, vol. ii. page 300.

Whether intellect was for ages latent among savages, this is not the proper place to inquire. It is a question which may be considered afterwards, when the author's opinion respecting the *four minds* in man passes under our review: but whatever may be thought of these peculiar sentiments, the reason here assigned for the difficulty of ascertaining the genuine instincts of man, will be admitted by all who have thought sufficiently on the subject.

Instinct. hand or any other substance; but after having experienced pain from too much light or any other thing which hurts the eye, and that pain having at first produced an automatic motion of the eye-lids, the motion comes in time to be so closely associated with its cause, that the very appearance of the latter produces the former. In all this there is no instinct, nor any thing which resembles instinct: in the one case, the motion of the eye-lids is in the strictest sense voluntary and rational; and in the other, it is either automatic or the effect of habit.

"The love of light (says the same writer) is exhibited by infants at a very early period. I have remarked evident symptoms of this attachment on the third day after birth. When children are farther advanced, marks of the various passions generally appear. The passion of fear is discoverable at the age of two months. It is called forth by approaching the hand to the child's eye, and by any sudden motion or unusual noise." It has likewise been said, that "an infant may be put into a fright by an angry countenance, and soothed again by smiles and blandishments;" and "that all these are cases of pure instinct." In reply to which, we scruple not to assert with Dr Priestley, that an infant (unless by an infant be meant a child who has a good deal of experience, and of course has made many observations on the connections of things) "is absolutely incapable of terror. I am positive (says he), that no child ever showed the least symptom of fear or apprehension till he had actually received hurts and had felt pain; and that children have no fear of any particular person or thing, but in consequence of some connection between that person or thing and the pain they have felt. If any instinct of this kind were more necessary than another, it would be the *dread of fire*. But every body must have observed, that infants show no sign of any such thing; for they will as readily put their finger to the flame of a candle as to any thing else, till they have been burned. But after some painful experience of this kind, their dread of fire, though undeniably the effect of association, becomes as quick and as effectual in its operations as if it were an original instinctive principle." We moreover do not hesitate to say, with the same great philosopher, that if it were possible always to beat and terrify a child with a placid countenance, so as never to assume that appearance but in those circumstances, and always to soothe him with what we call an angry countenance, this connection of ideas would be reversed, and we should see the child frightened with a smile and delighted with a frown. In fact, there is no more reason to believe that a child is naturally afraid of a frown, than that he is afraid of being in the dark; and of this children certainly discover no sign, till

Instinct. they have either found something disagreeable to them in the dark, or have been told that there is something dreadful in it.

The truth of these observations is so obvious, that we doubt not but they will carry conviction to the mind of every reader. For though it should be granted, that so early as on the third day after birth children exhibit symptoms of uneasiness upon the sudden exclusion of light, it would by no means follow that the *love* of light is in them instinctive (A). Light operates upon the eye by contact, and communicates to the infant a sensation of touch. If that sensation be pleasant, the child must necessarily feel some degree of uneasiness upon its removal, just as a full grown man must feel uneasy upon being deprived of any positive pleasure. But is *sensation*, or *pleasure*, or the *removal* of pleasure, pure instinct? No, surely.

Thus difficult is it to say in many cases what actions have their origin in instinct, and what are merely the effects of early association. But we think it may be safely affirmed, that no action, whether of man or brute, which is deliberately performed with a *view* to consequences, can with any propriety be said to proceed from instinct; for such actions are the effect of reason influenced by motives. Deliberation and instinct are obviously incompatible. To say with the author of the *Philosophy of Natural History*, "that, when we are stimulated by a particular instinct, instead of instantly obeying the impulse, another instinct arises in opposition, creates hesitation, and often totally extinguishes the *original motive* to action," is either to affirm what is apparently not true, or it is a gross perversion of language. *Motives* opposed to each other may create hesitation, and a powerful motive may counterbalance a feeble instinct; but of two or more instincts operating at the same time, and opposing each other, we have no conception. Instinct, if we choose to speak a language that is intelligible, means a certain impulse under the direction of Supreme Wisdom; and it is very little probable that such wisdom should give opposite impulses at the same instant. In the natural works of animals, which are confessedly under the influence of instinct, we perceive no symptoms of deliberation; but every one, when not interrupted by external violence, proceeds without hesitation in the direct road, to an end of which the animal itself knows nothing. The same would be the case with man were he under the guidance of instinct: and it is vain to say that the instinct of *fear* is daily counteracted by *ambition* and *resentment*, till it be proved that *fear*, *ambition*, and *resentment*, are really instincts. Of this, however, the author seems to have no doubt. Indeed his work is so liberally stored with these principles, so useful to every man who wishes to acquire the name of a philosopher without the labour of investigation, that not only *fear*, *ambition*, and *resentment*, but even *superstition*, *devotion*, *respect*

(A) It may with equal propriety be said, and upon apparently better evidence, that children have an instinctive *love of darkness*. A child who has been for some time in a dark room, will exhibit stronger symptoms of uneasiness upon the sudden introduction of candles, than he would upon candles being suddenly carried out of a room which had been for some time illuminated. This fact, and the reason of it, are well known to every man who has but barely dipped into the science of Optics: but no philosopher, till author arose, ever thought of accounting for it by the short and easy method of instinct.

instinct. *respect* for eminent characters, *avarice*, *hope*, *envy*, *benevolence*, and *sympathy*, are all, in his opinion, *instincts* simple or modified. The origin of fear we have already seen when examining the instincts said to exhibit themselves in early infancy: let us try if we cannot trace some other individuals of this numerous family to the same source of early associations.

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Source of
this error.

The case then seems to be as follows. We first perceive or suppose some real good, i. e. some fitness to promote our happiness, in those things which we love or desire. Hence we annex to those things the idea of pleasure; with which they come, in time, to be so closely associated in our minds, that they cannot ever after present themselves without bringing that idea along with them. This association likewise often remains even after that which first gave rise to it is quite forgotten, or perhaps does not exist. An instance or two will make this very clear. No man can be born a lover of money; for in a state of nature money exists not: no man therefore can be born with our author's instinct of avarice, directed in the manner which the most common acceptance of that word denotes. Yet how many men are there in the world, who have as strong a desire for money as if that desire were innate and instinctive; who account so much money so much happiness; and who make the mere possession of gold and silver, without any thought or design of using them, the ultimate end of all their actions? This is not because the love of money is born with them, for that is impossible; but because they first perceive a great many advantages from the possession of money, whence they conceive a pleasure in having it. Hence they desire it, endeavour to obtain it, and feel an actual pleasure in obtaining and possessing it. Then, by dropping the intermediate steps between money and happiness, they join money and happiness immediately together, and content themselves with the phantastic pleasure of having it; making that which was at first pursued only as *means*, be to them an *ultimate end*, in which consists their happiness or misery. The same might be observed concerning the thirst after knowledge, fame, ambition, and most of the various pursuits of life. These are at first entered upon with a view to some farther end, but at length become habitual exercises; with which the idea of pleasure is so closely associated, that we continue the pursuit after the reason from which it was at first begun has entirely vanished from our minds. Hence also we may account for another of our author's *modified instincts*, the almost diabolical feeling of *envy*. Mr Locke observes, that there are some men entirely unacquainted with this passion. His observation we believe to be a just one: for most men that are used to reflection, remember the time when they were first under its influence; and though they did not, it is a thing very little likely that the beneficent Author of nature should have implanted in the human mind even the seeds of an instinct, which, in the emphatic language of the Rambler, "is mere unmixed and genuine evil." Envy is that pain which arises in the mind upon observing the success or prosperity of others; not however of *all* others indefinitely, but only of those with whom, upon some account or other, the envious person has once had a rivalry. But of such a feeling the origin is obvious; for when two or more persons are competitors for the same

thing, the success of the one necessarily tends to the detriment of the other: hence the success of the one rival is in the mind of the other closely associated with pain or misery; and this association remaining after the rivalry which occasioned it has ceased, the person in whose mind envy is thus generated, always feels pain at the success of his rival even in affairs which have no relation to the original competition. Thus it is, that we are apt to envy those persons who refuse to be guided by our judgments, or persuaded by our arguments: For this is nothing else than a rivalry about the superiority of judgment; and we take a secret pride, both to let the world see, and in imagining ourselves, that in perspicacity and strength of judgment we have no superior.

Though the principle of association will be more fully explained in another place, there is one observation which must not be omitted here; it is, that we do not always, nor perhaps for the most part, make these associations ourselves, but learn them from others in very early life. We annex happiness or misery to certain things or actions, because we see it done by our parents or companions; and acquire principles of action by imitating those whom we esteem, or by being told, by those in whom we have been taught to place confidence, that such conduct will promote our happiness, and that the reverse will involve us in misery. Hence the son too often inherits both the vices and the party of his father as well as his estate; hence national virtues and vices, dispositions and opinions; and hence too it is, that habits formed before the period of distinct remembrance are so generally mistaken for natural instincts.

From the whole then of this investigation, we think ourselves warranted to conclude, that there is an essential difference between mechanism and instinct, and between both and reason; that mankind perform actions by each of these principles, and that those actions ought to be carefully distinguished; and, though the human mind is unquestionably endowed with a few instincts necessary to the preservation of the individual and the propagation of the race, that by far the greater part of those actions which are commonly said to proceed from instinct are merely the effects of early habits. We are likewise of opinion, that the present fashionable mode of referring almost every phenomenon in human nature to a particular instinct as its ultimate cause, is hurtful to science, as tending to check all further inquiry; and dangerous in morals, as making people implicitly follow, as the *dictates of nature* and *nature's God*, the *absurd*, *superstitious*, or *impious customs* of their respective countries.

INSTITUTES, in literary history, a book containing the elements of the Roman law.

The institutes are divided into four books; and contain an abridgment of the whole body of the civil law, being designed for the use of students. See LAW, no 6,—11. and 43, 44.

INSTITUTE, in Scots law. When by disposition or deed of entail a number of persons are called to the succession of an estate one after another, the person first named is called the *institute*, the others *substitutes*.

INSTITUTION, in general, signifies the establishing or founding something.—In the canon and

instinct
||
institution.

20

Men perform rational, instinctive, and automatic actions.

21

The danger of referring every phenomenon in human nature to a particular instinct as its ultimate cause.

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Instrument common law, it signifies the investing a clerk with the spiritualities of a rectory, &c. which is done by the bishop, who uses the following formula: "I institute you rector of such a church with the cure of souls, and receive your care and mine."

Insurance.

INSTITUTIONS, in literary matters, denote a system of the elements or rules of any art or science.

Thus physical, or medicinal institutions, are such as teach the necessary præcognita to the practice of medicine, or the cure of diseases.

INSTRUMENT, in general, whatever is subservient to a cause in producing any effect.

Mathematical, Philosophical, &c. INSTRUMENTS. See ASTRONOMY, ELECTRICITY, GEOMETRY, LEVELLING, MECHANICS, OPTICS, PNEUMATICS, &c. &c.

INSTRUMENT is also used in law, to signify some public act, or authentic deed, by means whereof any truth is made apparent, or any right or title established, in a court of justice.

Notarial INSTRUMENT, in Scots law, any fact certified in writing, under the hand of a notary-public.

INSUBRIUM AGER, (anc. geog.), a district of the Transpadana; situated between the Ticinus to the west, the Addua to the east, the Padus to the south, and Orobii to the north. The people called *Insabres* by Livy, *Insubri* by Ptolemy, and *Isombres* by Strabo. Now the Duchy of Milan.

INSULAR, any thing belonging to an island.—

Insular situations are productive of many happy consequences to the inhabitants, both with respect to the climate, security, and convenience for commerce; for a particular account of which, see ISLAND and COAST.

INSULATED, in architecture, an appellation giving to such columns as stand alone, or free from any contiguous wall, like an island in the sea; whence the name.

INSULATED, in electrical experiments. When any body is prevented from communicating with the earth by the interposition of an electric body, it is said to be insulated. See ELECTRICITY, p. 418.

INSURANCE, in law and commerce, a contract, whereby one party engages to pay the losses which the other may sustain, for a stipulated premium or consideration. The most common sorts are, Insurance against the dangers of the seas, insurance against fire, insurance of debts, and insurance of lives.

I. Insurance against Loss at Sea, is a most beneficial institution, for promoting the security of trade, and preventing the ruin of individuals; and is now conducted by a regular system of rules, established by the interposition of the legislature, the decision of the courts of justice, and the practice of merchants.

It is carried on to the best advantage by public companies, or by a considerable number of private persons, each of whom only engages for a small sum, on the same vessel. There are two public companies established by authority of parliament, viz. the London and Royal Exchange Insurance-Companies. For procuring subscription by private persons, brokers are generally employed, who extend the policy or contract of insurance, procure subscriptions, and assist at settling losses. They are intitled to an allowance for their trouble, generally 5 per cent. on premiums, and 2 per cent. on losses.

The parties who engage to pay the damage are called

the *insurers* or *under-writers*: the parties for whose security they engage are called the *insured*; and the premium is understood to be paid when the insurance is made.

On this subject, we shall consider, What is necessary to render an insurance valid:—When the risk commences, and when it terminates:—What constitutes a total or a partial loss:—What proof of loss is necessary:—and, How the loss is adjusted.

First, In order to render an insurance valid, the insured must have property really at stake; the voyage must take place under the circumstances agreed on; the dangers insured against must not be contrary to law; and a candid account must be given of circumstances which enhance the danger.

1. The condition of possessing property was required by 19 Geo. II. c. 37. to prevent ships from being fraudulently destroyed when insured above their value; and to discourage a practice which had become common, of converting policies to the purpose of mere wagers. In transactions of this kind, as the insured had no property, and could claim no indemnification for partial damage; so the insurers, having lost their wager by the ship's being lost, could claim no abatement, though part was saved: accordingly, the policies contained clauses of interest or no interest, free from average, and without benefit of salvage. All such policies are declared invalid.

This restriction does not extend to privateers, nor to ships trading to the Spanish or Portuguese plantations.

Insurances are commonly made as interest shall appear; and it is incumbent on the insured to prove the value of his property. The value of the goods may be proved by the invoices; and the coquet must be produced, if required, to instruct that the goods were actually shipped. It is admitted to value the ship at prime cost and charges, deducting the freights that have been drawn since purchased, if the proprietors choose to stand to that rule; but they are not restricted to it. Sometimes the value of the ship or goods is expressed in the policy; and this value must be admitted, although it be higher than the true one: but it is incumbent on the insured to prove that he had property at stake; and, if the property be trifling in comparison of the sum insured, the insurance will be set aside, as an evasion of the statute.

Expected profits, and bounty on the whale-fishery, if specified in the policy, may be insured.

When the value is less than the sum insured, the owners may claim a return of premium for the excess.

If there be several policies on the same subject, of different dates, the earlier one is valid, and the others must be vacated. If they be of the same date, they must be vacated in equal proportions.

When a policy is vacated, in whole or in part, the under-writers have a right to retain $\frac{1}{2}$ per cent. for their trouble.

In the case of a cargo intended for A, but afterwards sent to B, both expected it, and insured, and B claimed for the value on its being lost. The under-writers answered, that it was a double insurance, and they ought only to pay their proportion. Judgment was given, finding them liable for the whole, and reserving

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Insurance. to them any demand competent against the underwriters who insured for A.

Fraudulently to cast away or destroy a ship insured above its value, is felony.

2. If the ship does not proceed on the voyage, or if, being warranted to depart with convoy, it departs without convoy, the insurance must be vacated.

If the extent of a trading voyage be uncertain, the longest one in contemplation is described in the policy, and it is agreed that part of the premium shall be returned if the voyage be shortened. In like manner, in time of war, when insurance is made without condition of convoy, it is agreed that part of the premium be returned in case it fail with convoy.

When a ship is warranted to depart with convoy, it is understood from the usual place of convoy (*e. g.* the Downs), and it is insured till it arrive there.

The common proof of failing with convoy is the production of sailing orders; but, if a ship be prevented by the weather from receiving the sailing orders, other proof may be admitted.

A ship was insured from the Thames to Halifax, warranted to sail from Portsmouth with convoy. The convoy had failed before the ship arrived there, and the underwriters declined to insure it, without convoy, for the rest of the voyage. They were found liable to return part of the premium, retaining only in proportion to the accustomed rate from London to Portsmouth. This decision seems to establish the following principle, that, when the voyage performed is only part of that described in the policy, and when the risk can be proportioned, the underwriters are bound to return part of the premium, though there be no agreement for that purpose.

But, if a ship, insured only against the hazards of the sea, be taken by the enemy, the insured have no right to claim a return of premium, though the capture happens soon, under pretence that little sea-hazard was incurred.

If a ship deviates from the voyage described in the policy without necessity, it sets aside the insurance. An intention to deviate is not sufficient to set it aside; there must be an actual deviation; and, even in that case, the insurers are liable for damages sustained before deviation.

It is no deviation to go out of the way to the accustomed place of convoy, nor to the nearest place where necessary repairs may be had. Deviation, for the purpose of smuggling, if without the knowledge of the owners, does not set aside the insurance, nor when the master is forced by the crew to return.

In insurances to the East Indies, and home, the insurers are understood to take the risk of detention in the country, and of country voyages.

3. Insurance of prohibited goods, against the risk of seizure by the government, is unlawful, and invalid. The insurers, insured, brokers, and all accessories, are liable to the fine of 500 l.

4. If the insured have any information of more than common danger, they must reveal every such circumstance to the insurers, otherwise the policy is set aside.

This rule is established for the preservation of good faith; and there are several strong decisions in support of it. If a ship be spoke to leaky at sea, or if there be a report of its being lost, these circumstances

must be communicated to the insurers. Even the concealment of a false report of loss vitiates the insurance; and, if the ship be afterwards lost, though in a different manner, the insured will recover nothing. In a voyage from Carolina to London, another ship had sailed 10 days after that which was insured, and arrived seven days before the insurance was made; and the concealment of this circumstance, though the fact was not proved to the satisfaction of the jury, was considered as sufficient to set it aside. Also, during the continuance of the American war, a ship being insured from Portugal, by the month, without descending on the voyage, sailed for North America, and was taken by a provincial privateer. The insurers refused to pay, because the hazardous destination was concealed; and it was only upon proof of the insured being equally ignorant of it that they were found liable.

But the insured are not obliged to take notice of general perils, which the insurers are understood to have in contemplation; dangerous navigation, West-Indian hurricanes, enterprizes of the enemy, and the like.

Insurance is not set aside by a mistake in the name of the ship or master, or the like.

Insurance may be made on an uncertain ship; on any ship that the goods may be loaded on; on any ship that A shall sail in from Virginia. In this last case, the policy is not transferred to a ship which A goes on board during the voyage.

Secondly, If a ship be insured at and from a port, the insurance commences immediately if the ship be there, or at its arrival there. If it be damaged when preparing for a voyage, the insurers are liable; but not if the voyage be laid aside for several years, with consent of the owners. Insurance from a port commences when the ship breaks ground; and, if it set sail, and be driven back and lost in the port, the insurers are liable.

Insurance on goods generally continues till they be landed; but, if they be sold after the ship's arrival, and freight contracted to another port, the insurance is concluded. Goods sent on board another ship or lighter are not at the risk of the insurer; but goods sent ashore in the long boat are.

Insurance on freight commences when the goods are put on board.

Goods from the East Indies, insured to Gibraltar, and to be reshipped from thence to Britain, were put on board a store-ship at Gibraltar, to wait an opportunity of re-shipping, and were lost. The custom of putting goods aboard a store-ship being proved, the insurers were found liable.

Loss of sails ashore, when the ship is repairing, is comprehended within the insurance. What is necessarily understood, is insured, as well as what is expressed; the essential means, and intermediate steps, as well as the end. Ships performing quarantine are at the risk of the insurer.

Thirdly, The insurers are liable for a total loss when the subject perishes through any of the perils insured against. Baratry, though it properly signifies running away with the ship, extends to any kind of fraud in the master or mariners. Insurance against detention of princes does not extend to ships that are seized for transgressing the laws of foreign countries.

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Insurance

The insurers are also liable for a total loss, when damage is sustained, and the remaining property abandoned or vested in the insurers.

If a ship be stranded, or taken, and kept by the enemy, or detained by any foreign power, or seized for the service of the government, the proprietors have a right to abandon.

But, if a ship be taken by the enemy, and be retaken, or makes its escape, before action against the insurers; have the insured a right to abandon, or must they only claim for the damages sustained as an average loss? There are opposite decisions, according as the circumstances of the case were strong. When the ship was long detained, the goods perishable, the voyage entirely lost, or so disturbed, that the pursuit of it was not worth the freight, or when the damage exceeds half the value of the thing, they have been found intitled to abandon; (Goss against Withers, 2 Burrow, 683.) But, if the voyage be completed with little trouble or delay, they are not intitled; (Hamilton against Mendez, 2 Burrow, 1198.)

The insured cannot claim, as for a total loss, on an offer to abandon, when the loss is, in its nature, only partial; for, if this were permitted, they might devolve the loss occasioned by bad markets on the insurers.

And, in all cases, the insured have their option to abandon, or not. They may retain their property if they please, and claim for an average loss; and they must make their option before they claim.

If the goods be so much damaged, that their value is less than the freight, the insurers are accountable as for a total loss.

The insurers are liable for general average, when the property is charged with contribution; and for particular average, when the property is damaged, or part of it destroyed.

If the damage be sustained through the fault of the ship, the owners of the goods may have recourse, either against the master or insurers; and, if the insurers be charged, they stand in the place of the owners, and have recourse against the master.

In order to prevent the insurers from being troubled with frivolous demands for average, it is generally stipulated, that none shall be charged under 5 per cent. or some other determined rate; and corn, flax, fruit, fish, and like perishable goods, are warranted free from average, unless general, or the ship be stranded.

In order to encourage every effort to save the ship, the insurers are liable for charges laid out with that design, although the subject perish. Thus, they may be charged with more than the sum insured.

In case of goods being damaged, the proportion of the sum insured, for which the underwriters are liable, is regulated by the proportion of the prices which the found and damaged goods fetch at the port of destination. The prime cost of the goods is not considered, nor the necessity of immediate sale, in consequence of damage. Although the damaged goods sell above prime cost, the insurers are liable.

Fourthly, If a ship be lost, and the crew saved, the loss is proved by the evidence of the crew.

If damage be sustained, the extent is proved by an examination of the subject damaged, at the ship's arrival; and the cause by the evidence of the crew.

N^o 167.

If the ship be stranded, evidence must be taken at the place where stranded.

Documents of loss must be laid before the underwriters, with all convenient speed; and, if these be sufficiently clear, the loss should be immediately settled. The underwriters generally grant their notes at a month or six weeks date for their proportions.

If a ship be not heard of for a certain time, it is presumed lost; and the underwriters are liable to pay the sums insured, the property being abandoned to them in the event of the ship's return. Six months are allowed for a voyage to any part of Europe, a year to America, and two years to the East Indies.

By the ordinance of Hamburgh, if a ship be three months beyond the usual time of performing a voyage, the underwriters may be desired to pay 92 per cent. on an abandon. If they decline it, they are allowed 14 months more, and then they must pay the full value.

A ship insured against the hazards of the sea, but not against the enemy, if never heard of, is presumed lost at sea.

Fifthly, In order that the manner of settling losses may be understood, we must explain what is meant by covering property. We mentioned already, that insurances for greater sums than the insured had really at stake, were contrary to law: but some latitude is allowed in that respect; for if the owner were to insure no more than the exact value of his property, he would lose the premium of insurance, and the abatement, if any was agreed on.

For example, if he has goods on board to the value of 100l. and insures the same at 5 per cent. to abate 2 per cent. in case of loss; then, if a total loss happen, he recovers 98l. from the insurers, of which 5l. being applied to re-place the premium, the nett sum saved is only 93l.: but, if the value on board be only 93l. and the sum insured 100l. he would be fully indemnified for the loss; and his property, in that case, is said to be covered.

To find how much should be insured to cover any sum, subtract the amount of the premium and abatement (if any), from 100l. As the remainder is to 100l. so is the value, to the sum which covers it.

In case of a total loss, if the sum insured be not greater than that which covers the property, the insurers must pay it all. If greater, they pay what covers the property, and return the premium on the overplus.

Partial losses are regulated by this principle, that whereas the owner is not fully indemnified, in case of a total loss, unless he covers his property, therefore he should only be indemnified for a partial loss in the same proportion; and, if it be not fully insured, he is considered as insurer himself, for the part not covered, and must bear a suitable proportion of the loss. Therefore the value of the property is proved, and the sum required to cover it computed. If that sum be all insured, the underwriters pay the whole damage; if only part be insured, they pay their share; which is computed by the following rule: As the sum which covers the property is to the sum insured, so is the whole damage to the part for which the insurers are liable. -- For example, if the value of the property be 360l. the sum insured 300l. the premium 8 per cent.

Insurance.

Insurance. *cent.* and abatement 2 *per cent.*; then the sum which should be insured to cover the property is 400*l.*; and, if damage be sustained to the extent of 200*l.* the owners will recover 150*l.*

If a voyage is insured out and home, the premium outward must be considered as part of the value on the homeward property, and the sum necessary to cover it computed accordingly. For example, to insure 100*l.* out and home, at 5 *per cent.* each voyage, abatement 2 *per cent.* we compute thus:

93 : 100 :: L. 100 : L. 107 : 10 : 6, to be insured outward, premium on L. 107 : 10 : 6 outwards, at 5 *per cent.* L. 5 : 7 : 6 : 93 : 100 :: L. 105 : 7 : 6 : L. 113 : 6*s.* to be insured home; the premium on which is L. 5 : 13 : 6; and, if the ship be lost on the homeward voyage,

From the sum insured home	L. 113	6	0
Subtract the discount, 2 <i>per cent.</i>	-	2	5
			3

Sum for which the insurers are liable	L. 111	—	9
Insurance out	L. 5	7	6
Insurance home	-	5	13
			3
			11 — 9

Covered property L. 100 — —

II. Insurance against Fire. There are several offices in Britain for this purpose, of which the sun fire-office is the most considerable. Insurances are divided into common, hazardous, and doubly hazardous, according to the nature of the subject insured. When the sum insured is high, there is a higher premium *per cent.* demanded; and money, papers, jewels, pictures, and gun-powder, are not comprehended. If a subject be wrong described, in order that it may be insured at a lower premium, the policy is void. The benefit of a policy is transferred, by indorsement, to the representatives of the person in whose favour it was made; and it may be transferred to other houses when the insured changes his habitation. If insurance be made on the same subject in different offices, it must be specified, by indorsement, on the policy; and, in case of loss, the offices pay proportionally. The insurers pay all expences in attempting to extinguish fire, or save goods, though not successful. If the value of a subject be insured in part, and damage be sustained, the insurers pay the whole, if it does not exceed the sum insured.

III. Insurance of Debts. See BOTTOMRY.

IV. In virtue of *Insurance for Lives*, when the person dies, a sum of money becomes payable to the person on whose behalf the policy of insurance was granted. One of the principal insurance-offices of this kind, is that of the amicable society for a perpetual assurance, kept in Serjeant's inn, Fleet-street, London.

This Society at Serjeant's inn requires an annual payment of 5*l.* from every member during life, payable quarterly. The whole annual income hence arising is equally divided among the nominees, or heirs, of such members as die every year; and this renders the dividends among the nominees, in different years, more or less, according to the number of members who have happened to die in those years. But this society engages that the dividends shall not be less than 150*l.* to each claimant, though they may be more.—None are admitted whose ages are greater than 45,

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or less than 12; nor is there any difference of contribution allowed on account of difference of age.—This society has subsisted ever since 1706, and its credit and usefulness are well established. Its plan, however, is liable to several objections. First, it is evident, that regulating the dividends among the nominees, by the number of members who die every year, is not equitable; because it makes the benefit which a member is to receive to depend, not on the value of his contribution, but on a contingency; that is, the number of members that shall happen to die the same year with him. Secondly, its requiring the same payments from all persons under 45, is also not equitable; for the payment of a person admitted at 12 ought not to be more than half the payment of a person admitted at 45. Thirdly, its plan is so narrow, as to confine its usefulness too much. It can be of no service to any person whose age exceeds 45. It is, likewise, by no means properly adapted to the circumstances of persons who want to make assurances on their lives for only one year, or a short term of years. For example: the true value of the assurance of 150*l.* for five years, on the life of a person whose age is 39, may be found, by the first rule, to be nearly three guineas *per ann* supposing interest at 3 *per cent.* and the probability of the duration of human life, as they are given in Dr Halley's Table of Observations. But such an assurance could not be made in this society without an annual payment of 5*l.* Neither is the plan of this society at all adapted to the circumstances of persons who want to make assurances on particular survivorships. For example: a person possessed of an estate or salary, which must be lost with his life, has a person dependent upon him, for whom he desires to secure a sum of money payable at his death. But he desires this only as a security against the danger of his dying first, and leaving a wife, or a parent, without support. In these circumstances he enters himself into this society; and, by an annual payment of 5*l.* intitles his nominee at his death to 150*l.* In a few years, perhaps, his nominee happens to die; and having then lost the advantages he had in view, he determines to forfeit his former payments, and to withdraw from the society. The right method, in this case, would have been to have taken from such a person the true value of the sum assured, "on the supposition of non-payment, provided he should survive." In this way he would have chosen to contract with the society: and had he done this, he would have paid for the assurance (supposing interest at 3 *per cent.* his age 30, the age of his nominee 30, and the values of lives as given by M. De Moivre) 3*l.* 8*s.* in annual payments, to begin immediately, and to be continued during the joint duration of his own life, and the life of his nominee.

None of these objections are applicable to the plan of the society which meet at Black Friars bridge, and which has justly styled itself the *Equitable Society for Assurances on Lives and Survivorships*. The business transacted by this society is so extensive, and it is governed so entirely by calculations, founded on the best rules and observations, that it cannot but prove one of the greatest public benefits.

It was established in the year 1762, in consequence of proposals which had been made, and lectures recom-

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Insurance.

mending such a design, which had been read by Mr Dodson, the author of the *Mathematical Repository*. It assures any sums or reversionary annuities, on any life or lives for any number of years, as well as for the whole continuance of the lives; and in any manner that may be best adapted to the views of the persons assured: that is, either by making the assured sums payable certainly at the failure of any given lives; or on condition of survivorship; and also, either by taking the price of the assurance in one present payment, or in annual payment, during any single or joint lives, or any terms, less than the whole possible duration of the lives. Any persons, for instance, who depend on incomes which must be lost when they die, or who are only tenants for life in estates, may, if they want to borrow money, be enabled to give sufficient security, by assuring such sums as they want to borrow in this society, and assigning the policy; in consequence of which, the lender will, during the term of the assurance, be guarded against all danger of losing his principal by the death of the borrower. In the same way, clergymen, counsellors, persons holding any places of profit, traders, and others, who have families, whose subsistence depends on the continuance of their lives, may here be enabled to make some provision for their families after their decease. All persons who enjoy annuities for the lives of others, may here secure themselves against the loss they would sustain, should they survive the persons on whose lives the annuities depend, by making assurances which should intitle them to any sums, payable on condition their survivorship should take place. Any person intitled to an estate, annuity, legacy, or office, after another person, provided he survives, may here secure some equivalent for his family at his decease, provided he does not survive.—Husbands may, in this society, secure annuities for their wives, provided they should leave them widows. Parents, by assuring the lives of their children when infants, till they attain a given age, may secure for them, should they live to that age, such sums as may be necessary to put them out to apprenticeships, or to make capitals or fortunes for them, with which to set out in business, or to marry. Any persons, apprehensive of being left without support in old age, when incapable of labour, may, in this society, purchase an annuity, to commence at any future year of his life, and to continue during the remainder of his life; and he may do this at a very small expence, if he is young, and willing to wait for the commencement of his annuity till he is 55 or 60 years of age.

In short, there are no kinds of assurances on lives and survivorships, which this society does not make. In doing this, it follows the rules which have been given by the best mathematical writers on the doctrine of *life annuities* and *reversions*, particularly Mr Simpson: and, in order to gain such a profit as may render it a permanent benefit to the public, and enable it to bear the expences of management, it takes the advantage of making its calculations at so low an interest as 3 per cent. and from tables of the probabilities and values of lives in London, where (as in all great towns) the rate of human mortality is much greater than it is in common among mankind.

Insurance.

This society has lately made a particular inquiry into its own state, as to *profit* and *loss*, by all the business it has transacted from its first institution. This inquiry was made in three different methods, proposed to the directors by Dr Price, the author of the *Treatise on Reversionary Payments*; and the result has been, that it appears, that a much smaller proportion of the persons assured have died than *should* have died, according to the tables for London, from which the calculations have been made, or even according to Dr Halley's table for Breslaw; that, for this reason, the claims have been much less than they *should* have been; and that the society has for many years been enjoying an income some thousands *per annum* greater than it wants, and a *surplus stock* of near L. 40,000, over and above what is necessary to enable it to make good all its engagements.

In these circumstances, the society finding itself well secured against future hazards, and being unwilling to take from the public an extravagant profit, have determined to reduce all the *future* payments for assurances *one-tenth*; and also to return to the persons now assured *one-tenth* of all the payments which they have made. And there is, it seems, reason to expect, that this will be only a preparation for farther reductions. Nor need the public, we are informed, be apprehensive of their going too far in making reductions; for in consequence of the inquiry they have lately made, and of the order into which this inquiry has thrown their accounts, they will have it in their power to determine exactly from year to year what they are able to do, and always to keep under their view a clear state of their own circumstances.

From the preceding account of this society it is manifest, that its business is such, that none but skilful mathematicians are qualified to conduct it. The interest of the society therefore absolutely requires, that it should make the places of those who manage its business so advantageous, as to induce the ablest mathematicians to accept them; and this will render it the more necessary for the society to take care, on any future vacancies, to pay no regard in filling them up, to any other considerations than the ability and integrity of the candidates. The consequence of granting good pay will be a multitude of solicitations on every vacancy, from persons who, however unqualified, will hope for success from their connections, and the interest they are able to make; and should the society, in any future time, be led by such causes to trust its business in the hands of persons not possessed of sufficient ability, as *calculators* and *mathematicians*, such mistakes may be committed as may prove in the highest degree detrimental. We have reason to know, that at present the society is in no danger of this kind; and one of the great public advantages attending it is, that it has established an *office*, where not only the business we have described is transacted with faithfulness and skill; but where also all who want solutions of any questions relating to life annuities and reversions may apply, and be sure of receiving just answers.

TABLE

Insurance
Intellect.

TABLE of the Rates of Assurance on Single Lives in the Society for equitable Assurances near Black-Friars Bridge.

Sum assured L. 100.

Age.	One year.			Seven years at an annual payment of.			For the whole life, at an annual payment of.		
	£.	s.	d.	£.	s.	d.	£.	s.	d.
10	1	9	6	1	10	7	2	2	10
15	1	11	0	1	12	7	2	6	6
20	1	13	11	1	16	0	2	12	10
25	1	17	7	2	0	2	3	0	6
30	2	2	6	2	6	0	3	8	11
35	2	8	7	2	14	2	3	17	9
40	2	19	2	3	5	1	4	7	11
45	3	11	0	3	18	6	5	0	0
50	4	4	8	4	11	2	5	12	11
55	5	0	9	5	11	7	6	9	3
60	5	19	1	6	16	10	7	17	7
65	7	0	11	8	13	0	10	3	9

These rates are 10 *per cent.* lower than the true values, according to the decrements of life in London, reckoning interest at 3 *per cent.*; but at the same time, for all ages under 50, they are near a *third* higher than all the true values, according to Dr Halley's Table of the decrements of life at Breslaw, and Dr Price's Tables of the decrements of life at Northampton and Norwich.—As therefore this society has lately found, that the decrements of life among its members have hitherto been lower than even those given in these last Tables, it may be reasonably expected, that they will in time reduce their rates of assurance to the true values by these tables.

Re-Insurance is a second contract, made by an insurer, to transfer the risk he has engaged for to another. It is in general forbidden by 19 Geo. II. c. 37. but is permitted to the representatives of an insurer in case of his death, or to his assignees in case of his bankruptcy; and it must be mentioned in the policy that it is a re-insurance.

INTAGLIOS, precious stones on which are engraved the heads of great men, inscriptions, and the like; such as we frequently see set in rings, seals, &c.

INTEGER, in arithmetic, a whole number, in contradistinction to a fraction.

INTEGRAL, or *INTEGRANT*, in philosophy, appellations given to parts of bodies which are of a similar nature with the whole: thus filings of iron have the same nature and properties as bars of iron.

Bodies may be reduced into their integrant parts by triture or grinding, limation or filing, solution, amalgamation, &c. See *GRINDING*, &c.

INTEGUMENTS, in anatomy, denote the common coverings which invest the body; as the cuticula, cutis, &c. See *ANATOMY*.

INTEGUMENT is also extended to the particular membranes which invest certain parts of the body; as the coats or tunics of the eye.

INTELLECT, a term used among philosophers, to signify that faculty of the soul usually called the *understanding*. See *LOGIC* and *METAPHYSICS*,

INTENDANT, one who has the conduct, inspection, and management, of any thing. See *SUPERINTENDANT*.

This is a title frequent among the French: they have *intendants of the marine*, who are officers in the sea-ports, whose business it is to take care the ordinances and regulations relating to sea-affairs be observed: *intendants of the finances*, who have the direction of the revenues: *intendants of provinces*, who are appointed by the king to take care of the administration of justice, policy, and finances in the provinces: also *intendants of buildings, of houses, &c.*

INTENDMENT, in law, is the intention, design, or true meaning, of a person or thing, which frequently supplies what is not fully expressed; but though the intent of parties in deeds and contracts is much regarded by the law, yet it cannot take place against the rules of law.

INTENDMENT of Crimes; this, in case of treason, where the intention is proved by circumstances, is punishable in the same manner as if it was put in execution. So, if a person enter a house in the night-time, with an intent to commit burglary, it is felony; also, an assault, with an intent to commit a robbery on the highway is made felony, and punished with transportation, 7 Geo. II. c. 21.

INTENT, in the civil law, signifies to begin, or commence, an action or process.

INTENTION, in medicine, that judgment or method of cure which a physician forms to himself from a due examination of symptoms.

INTENTION, in physics, the increase of the power or energy of any quality; as heat, cold, &c. by which it stands opposed to *remission*, which signifies its decrease or diminution.

INTENTION, in metaphysics, denotes an exertion of the intellectual faculties with more than ordinary vigour; when the mind with earnestness fixes its view on any idea, considers it on all sides, and will not be called off by any solicitation.

INTERAMNA (anc. geog.), so called from its situation between rivers, or in an island in the river Nar; a town of the Cisalpine Umbria. *Interamnates* the people; surnamed *Nartes* by Pliny, to distinguish them from the people of other Interamnæ. Now *Terni*; a town in the Pope's territory in Umbria. E. Long. 13. 38. N. Lat. 42. 40.

INTERAMNA, a town and colony of the Volsci in Latium, on the confines of Samnium, at the confluence of the rivers Liris and Melpis; and for distinction sake called *Lirinas*. The town is now in ruins.

INTERAMNA, or *Interamnium Præutianorum* (Ptolemy); a town in the territory of the Præutians, a part of the Picenum. Now *Teramo*, in the Abruzzo of Naples. E. Long. 15. N. Lat. 42. 40.

INTERCALARY, an appellation given to the odd day inserted in leap-year; which was so called from *calo, calare*, "to proclaim," it being proclaimed by the priests with a loud voice.

INTERCATIA (anc. geog.), a town of the Vaccæi in the Hither Spain. Here Scipio Æmilianus slew a champion of the barbarians in single combat; and was the first who mounted the wall in taking the town. It was situated to the south-east of Asturica; now said to be in ruins.

Intercession
||
Interest.

INTERCESSION (*intercessio*), was used in ancient Rome, for the act of a tribune of the people, or other magistrate, by which he inhibited the acts of other magistrates; or even, in case of the tribunes, the decrees of the senate. *Veto* was the solemn word used by the tribunes when they inhibited any decree of the senate or law proposed to the people. The general law of these intercessions was, that any magistrate might inhibit the acts of his equal or inferior; but the tribunes had the sole prerogative of controlling the acts of every other magistrate, yet could not be controlled themselves by any.

INTERCESSOR (from *inter* and *cedo* "I go between"), a person who prays, expostulates, or intercedes, in behalf of another. In the Roman law, intercessor was the name of an officer, whom the governors of provinces appointed principally to raise taxes and other duties.

INTERCESSOR is also a term heretofore applied to such bishops as, during the vacancy of a see, administered the bishoprick, till a successor to the deceased bishop had been elected. The third council of Carthage calls these *interventors*.

INTERCOLUMNIATION, in architecture, denotes the space between two columns, which is always to be proportioned to the height and bulk of the columns.

INTERCOSTAL, in anatomy, an appellation given to such muscles, nerves, arterics, and veins, as lie between the ribs.

INTERDICT, an ecclesiastical censure, by which the church of Rome forbids the performance of divine service in a kingdom, province, town, &c. This censure has been frequently executed in France, Italy, and Germany; and in the year 1170, pope Alexander III. put all England under an interdict, forbidding the clergy to perform any part of divine service, except baptizing of infants, taking confessions, and giving absolution to dying penitents. But this censure being liable to the ill consequences of promoting libertinism and a neglect of religion, the succeeding popes have very seldom made use of it.

There was also an interdict of persons, who were deprived of the benefit of attending on divine service. Particular persons were also anciently interdicted of fire and water, which signified a banishment for some particular offence: by their censure no person was allowed to receive them, or allow them fire or water; and being thus wholly deprived of the two necessary elements of life, they were doubtless under a kind of civil death.

INTEREST, is the premium or money paid for the loan or use of other money. See **ARITHMETIC**, n° 10.

Many good and learned men have in former times very much perplexed themselves and other people by raising doubts about the legality of interest in *foro conscientie*. It may not be amiss here to inquire upon what grounds this matter does really stand.

The enemies to interest in general make no distinction between that and usury, holding any increase of money to be indefensibly usurious. And this they ground as well on the prohibition of it by the law of Moses among the Jews, as also upon what is laid down by Aristotle, That money is naturally barren; and to

make it breed money is preposterous, and a perversion of the end of its institution, which was only to serve the purposes of exchange, and not of increase. Hence the school-divines have branded the practice of taking interest, as being contrary to the divine law both natural and revealed; and the canon law has prescribed the taking any the least increase for the loan of money as a mortal sin.

But, in answer to this, it may be observed, that the Mosaic precept was clearly a political, and not a moral, precept. It only prohibited the Jews from taking usury from their brethren the Jews; but in express words permitted them to take it of a stranger: which proves that the taking of moderate usury, or a reward for the use, for so the word signifies, is not *malum in se*, since it was allowed where any but an Israelite was concerned. And as to Aristotle's reason, deduced from the natural barrenness of money, the same may with equal force be alleged of houses, which never breed houses; and twenty other things, which nobody doubts it is lawful to make profit of, by letting them to hire. And though money was originally used only for the purposes of exchange, yet the laws of any state may be well justified in permitting it to be turned to the purposes of profit, if the convenience of society (the great end for which money was invented) shall require it. And that the allowance of moderate interest tends greatly to the benefit of the public, especially in a trading country, will appear from that generally acknowledged principle, that commerce cannot subsist without mutual and extensive credit. Unless money therefore can be borrowed, trade cannot be carried on: and if no premium were allowed for the hire of money, few persons would care to lend it; or at least the ease of borrowing at a short warning (which is the life of commerce) would be entirely at an end. Thus, in the dark ages of monkish superstition and civil tyranny, when interest was laid under a total interdict, commerce was also at its lowest ebb, and fell entirely into the hands of the Jews and Lombards: but when mens minds began to be more enlarged, when true religion and real liberty revived, commerce grew again into credit; and again introduced with itself its inseparable companion, the doctrine of loans upon interest.

And, really, considered abstractedly from this its use, since all other conveniences of life may be either bought or hired, but money can only be hired, there seems no greater impropriety in taking a recompence or price for the hire of this, than of any other convenience. If one borrow 100 l. to employ in a beneficial trade, it is but equitable that the lender should have a proportion of the gains. To demand an exorbitant price is equally contrary to conscience, for the loan of a horse, or the loan of a sum of money: but a reasonable equivalent for the temporary inconvenience which the owner may feel by the want of it, and for the hazard of his losing it entirely, is not more immoral in one case than it is in the other. And indeed the absolute prohibition of lending upon any, even moderate interest, introduces the very inconvenience which it seems meant to remedy. The necessity of individuals will make borrowing unavoidable. Without some profit by law, there will be but few lenders: and those principally bad men, who will break through the law, and

Interest

Interest. and take a profit; and then will endeavour to indemnify themselves from the danger of the penalty, by making that profit exorbitant. Thus, while all degrees of profit were discountenanced, we find more complaints of usury, and more flagrant instances of oppression, than in modern times when money may be easily had at a low interest. A capital distinction must therefore be made between a moderate and exorbitant profit; to the former of which we usually give the name of *interest*, to the latter the truly odious appellation of *usury*: the former is necessary in every civil state; if it were but to exclude the latter, which ought never to be tolerated in any well-regulated society. For, as the whole of this matter is well summed up by Grotius, "if the compensation allowed by law does not exceed the proportion of the hazard run, or the want felt, by the loan, its allowance is neither repugnant to the revealed nor to the natural law: but if it exceeds those bounds, it is then oppressive usury; and though the municipal laws may give it impunity, they never can make it just."

We see, that the exorbitance or moderation of interest, for the money lent, depends upon two circumstances; the inconvenience of parting with it for the present, and the hazard of losing it entirely. The inconvenience to individual lenders can never be estimated by laws; the rate therefore of general interest must depend upon the usual or general inconvenience. This results entirely from the quantity of specie or current money in the kingdom: for, the more specie there is circulating in any nation, the greater superfluity there will be, beyond what is necessary to carry on the business of exchange and the common concerns of life. In every nation, or public community, there is a certain quantity of money thus necessary; which a person well skilled in political arithmetic might perhaps calculate as exactly, as a private banker can the demand for running cash in his own shop: all above this necessary quantity may be spared, or lent, without much inconvenience to the respective lenders; and the greater this national superfluity is, the more numerous will be the lenders, and the lower ought the rate of the national interest to be: but where there is not enough, or barely enough, circulating cash, to answer the ordinary uses of the public, interest will be proportionably high; for lenders will be but few, as few can submit to the inconvenience of lending.

So also the hazard of an entire loss has its weight in the regulation of interest: hence, the better the security, the lower will the interest be; the rate of interest being generally in a compound *ratio*, formed out of the inconvenience and the hazard. And as, if there were no inconvenience, there should be no interest but what is equivalent to the hazard; so, if there were no hazard, there ought to be no interest, save only what arises from the mere-inconvenience of lending. Thus, if the quantity of specie in a nation be such, that the general inconvenience of lending for a year is computed to amount to three *per cent.* a man that has money by him will perhaps lend it upon good personal security at five *per cent.* allowing two for the hazard run; he will lend it upon landed security, or mortgage, at four *per cent.* the hazard being proportionably less; but he will lend it to the state, on the maintenance of

which all his property depends, at three *per cent.* the hazard being none at all.

But sometimes the hazard may be greater than the rate of interest allowed by law will compensate. And this gives rise to the practice, 1. Of bottomry, or *respondentia*. 2. Of policies of insurance. See BOTTOMRY, and INSURANCE.

Upon the two principles of inconvenience and hazard, compared together, different nations have at different times established different rates of interest. The Romans at one time allowed *centesima*, one *per cent.* monthly, or twelve *per cent. per annum*, to be taken for common loans; but Justinian reduced it to *trientes*, or one third of the *as* or *centesima*, that is, four *per cent.*; but allowed higher interest to be taken of merchants, because there the hazard was greater. So too Grotius informs us, that in Holland the rate of interest was then eight *per cent.* in common loans, but twelve to merchants. Our law establishes one standard for all alike, where the pledge or security itself is not put in jeopardy; lest, under the general pretence of vague and indeterminate hazards, a door should be opened to fraud and usury: leaving specific hazards to be provided against by specific insurances, or by loans upon *respondentia* or bottomry. But as to the rate of legal interest, it has varied and decreased for 200 years past, according as the quantity of specie in the kingdom has increased by accessions of trade, the introduction of paper-credit, and other circumstances. The statute 37 Hen. VIII. c. 9. confined interest to ten *per cent.* and so did the statute 13 Eliz. c. 8. But as, through the encouragements given in her reign to commerce, the nation grew more wealthy; so, under her successor, the statute 21 Jac. I. c. 17. reduced it to eight *per cent.*; as did the statute 12 Car. II. c. 13. to six; and lastly, by the statute 12 Ann. R. 2. c. 16. it was brought down to five *per cent.* yearly, which is now the extremity of legal interest that can be taken. But yet, if a contract which carries interest be made in a foreign country, our courts will direct the payment of interest according to the law of that country in which the contract was made. Thus Irish, American, Turkish, and Indian interest, have been allowed in our courts to the amount of even 12 *per cent.* For the moderation or exorbitance of interest depends upon local circumstances; and the refusal to enforce such contracts would put a stop to all foreign trade. And, by stat. 14 Geo. III. c. 79. all mortgages and other securities upon estates or other property in Ireland or the plantations, bearing interest not exceeding six *per cent.* shall be legal; though executed in the kingdom of Great Britain: unless the money lent shall be known at the time to exceed the value of the thing in pledge; in which case also, to prevent usurious contracts at home under colour of such foreign securities, the borrower shall forfeit treble the sum so borrowed.

INTERJECTION, in grammar, an indeclinable part of speech, signifying some passion or emotion of the mind. See GRAMMAR.

INTERIM, a name given to a formulary, or kind of confession of the articles of faith, obtruded upon the Protestants after Luther's death by the emperor Charles V. when he had defeated their forces; so called because it was only to take place in the *interim* (mean time).

Interlocu-
tor
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Interment

time) till a general council should have decided all points in dispute between the Protestants and Romanists. It retained most of the doctrines and ceremonies of the Romanists, excepting that of marriage, which was allowed to the clergy, and communion to the laity under both kinds. Most of the Protestants rejected it. There were two other interims; one of Leipsic, the other of Franconia.

INTERLOCUTOR, in Scots law. The sentence or judgment of a court of law, is commonly called an *interlocutor* before decree is extracted.

INTERLOCUTORY decree, in English law. In a suit in equity, if any matter of fact be strongly controverted, the fact is usually directed to be tried at the bar of the court of king's bench, or at the assizes, upon a feigned issue. If a question of mere law arises in the course of a cause, it is the practice of the court of chancery to refer it to the opinion of the judges of the court of king's bench, upon a case stated for that purpose. In such cases, interlocutory decrees or orders are made.

INTERLOCUTORY judgments are such as are given in the middle of a cause, upon some plea, proceeding on default, which is only intermediate, and does not finally determine or complete the suit. But the interlocutory judgments most usually spoken of, are those incomplete judgments, whereby the right of the plaintiff is established, but the *quantum* of damages sustained by him is not ascertained, which is the province of a jury. In such a case a writ of inquiry issues to the sheriff, who summons a jury, enquires of the damages, and returns to the court the inquiry so taken, whereupon the plaintiff's attorney taxes costs, and signs final judgment.

INTERLOCUTORY Order, that which decides not the cause, but only settles some intervening matter relating to the cause. As, where an order is made in chancery, for the plaintiff to have an injunction, to quit possession till the hearing of the cause; this order, not being final, is called *interlocutory*.

INTERLOPERS, are properly those who, without due authority, hinder the trade of a company or corporation lawfully established, by dealing in the same way.

INTERLUDE, an entertainment exhibited on the theatre between the acts of a play, to amuse the spectators while the actors take breath and shift their dress, or to give time for changing the scenes and decorations.

In the ancient tragedy, the chorus sung the interludes, to show the intervals between the acts.

Interludes, among us, usually consist of songs, dances, feats of activity, concerts of music, &c.

Aristotle and Horace give it for a rule, that the interludes should consist of songs built on the principal parts of the drama; but since the chorus has been laid down, dancers, buffoons, &c. ordinarily furnish the interludes.

INTERMENT, the act of interring, *i. e.* burying or laying a deceased person in the ground.

Aristotle asserted, that it was more just to assist the dead than the living. Plato, in his Republic, does not forget, amongst other parts of justice, that which concerns the dead. Cicero establishes three kinds of justice; the first respects the gods, the second the

manes or dead, and the third men. These principles seem to be drawn from nature; and they appear at least to be necessary for the support of society, since at all times civilized nations have taken care to bury their dead, and to pay their last respects to them. See **BURIAL**.

We find in history several traces of the respect which the Indians, the Egyptians, and the Syrians entertained for the dead. The Syrians embalmed their bodies with myrrh, aloes, honey, salt, wax, bitumen, and resinous gums; they dried them also with the smoke of the fir and the pine tree. The Egyptians preserved theirs with the resin of the cedar, with aromatic spices, and with salt. These people often keep such mummies, or at least their effigies, in their houses, and at grand entertainments they were introduced, that by reciting the great actions of their ancestors they might be better excited to virtue. See **FUNERAL Rites**.

The Greeks, at first, had probably not the same veneration for the dead as the Egyptians. Empedocles, therefore, in the eighty-fourth Olympiad, restored to life Ponthia, a woman of Agrigentum, who was about to be interred*. But this people, in proportion as they grew civilized, becoming more enlightened, perceived the necessity of establishing laws for the protection of the dead.

At Athens the law required that no person should be interred before the third day; and in the greater part of the cities of Greece a funeral did not take place till the sixth or seventh. When a man appeared to have breathed his last, his body was generally washed by his nearest relations, with warm water mixed with wine. They afterwards anointed it with oil; and covered it with a dress, commonly made of fine linen, according to the custom of the Egyptians. This dress was white at Messina, Athens, and in the greater part of the cities of Greece, where the dead body was crowned with flowers. At Sparta it was of a purple colour, and the body was surrounded with olive leaves. The body was afterwards laid upon a couch in the entry of the house, where it remained till the time of the funeral. At the magnificent obsequies with which Alexander honoured Hephestion, the body was not burned until the tenth day.

The Romans, in the infancy of their empire, paid as little attention to their dead as the Greeks had done. Acilius Aviola having fallen into a lethargic fit, was supposed to be dead; he was therefore carried to the funeral pile; the fire was lighted up; and though he cried out he was still alive, he perished for want of speedy assistance. The Prætor Lamia met with the same fate. Tubero, who had been Prætor, was saved from the funeral pile. Asclepiades a physician, who lived in the time of Pompey the Great, about one hundred and twenty years before the Christian æra, returning from his country-house, observed near the walls of Rome a grand convoy and a crowd of people, who were in mourning assisting at a funeral, and showing every exterior sign of the deepest grief. Having asked what was the occasion of this intercourse, no one made any reply. He therefore approached the pretended dead body; and imagining that he perceived signs of life in it, he ordered the bystanders to take away the flambeaux, to extinguish the fire, and to pull down the funeral pile. A kind of murmur on this a-

Interment.

* Diogenes Laertius de Vita et Moribus Philosophorum, lib. 8.

rose

Interment. rose throughout the whole company. Some said that they ought to believe the physician, while others turned both him and his profession into ridicule. The relations, however, yielded at length to the remonstrances of Asclepiades; they consented to defer the obsequies for a little; and the consequence was, the restoration of the pretended dead person to life. It appears that these examples, and several others of the like nature, induced the Romans to delay funerals longer, and to enact laws to prevent precipitate interments.

At Rome, after allowing a sufficient time for mourning, the nearest relation generally closed the eyes of the deceased; and the body was bathed with warm water, either to render it fitter for being anointed with oil, or to reanimate the principle of life, which might remain suspended without manifesting itself. Proofs were afterwards made, to discover whether the person was really dead, which were often repeated during the time that the body remained exposed; for there were persons appointed to visit the dead, and to prove their situation. On the second day, after the body had been washed a second time, it was anointed with oil and balm. Luxury increased to such a pitch in the choice of foreign perfumes for this purpose, that under the consulship of Licinius Crassus and Julius Cæsar, the senate forbade any perfumes to be used except such as were the production of Italy. On the third day the body was clothed according to its dignity and condition. The robe called the *prætecta* was put upon magistrates, and a purple robe upon consuls; for conquerors, who had merited triumphal honours, this robe was of gold tissue. For other Romans it was white, and black for the lower classes of the people. These dresses were often prepared at a distance, by the mothers and wives of persons still in life. On the fourth day the body was placed on a couch, and exposed in the vestibule of the house, with the visage turned towards the entrance, and the feet near the door; in this situation it remained till the end of the week. Near the couch were lighted wax-tapers, a small box in which perfumes were burnt, and a vessel full of water for purification, with which those who approached the body besprinkled themselves. An old man, belonging to those who furnished every thing necessary for funerals, sat near the deceased, with some domestics clothed in black. On the eighth day the funeral rites were performed; but to prevent the body from corrupting before that time, salt, wax, the resinous gum of the cedar, myrrh, honey, balm, gypsum, lime, asphalt, or bitumen of Judea, and several other substances, were employed. The body was carried to the pile with the face uncovered, unless wounds or the nature of the disease had rendered it loathsome and disgusting. In such a case a mask was used, made of a kind of platter; which has given rise to the expression of *funera larvata*, used in some of the ancient authors. This was the last method of concealment which Nero made use of, after having caused Germanicus to be poisoned: for the effect of the poison had become very sensible by livid spots and the blackness of the body; but a shower of rain happening to fall, it washed the plaster entirely away, and thus the horrid crime of fratricide was discovered.

The Turks have, at all times, been accustomed to

wash the bodies of their dead before interment; and as their ablutions are complete, and no part of the body escapes the attention of those who assist at such melancholy ceremonies, they can easily perceive whether one be really dead or alive, by examining, among other methods of proof, whether the *sphincter ani* has lost its power of contraction. If this muscle remains still contracted, they warm the body, and endeavour to recal it to life; otherwise, after having washed it with water and soap, they wipe it with linen cloths, wash it again with rose-water and aromatic substances, cover it with a rich dress, put upon its head a cap ornamented with flowers, and extend it upon a carpet placed in the vestibule or hall at the entrance of the house.

In the primitive church the dead were washed and then anointed; the body was wrapped up in linen, or clothed in a dress of more or less value according to circumstances, and it was not interred until after being exposed and kept some days in the house. The custom of clothing the dead is preserved in France only for princes and ecclesiastics.

In other countries, more or less care is taken to prevent sudden interments. At Geneva, there are people appointed to inspect all dead bodies. Their duty consists in examining whether the person be really dead, and whether one died naturally or by violence. In the north, as well as at Genoa, it is usual not to bury the dead till three days have expired. In Holland, people carry their precautions much farther, and delay the funerals longer. And in England bodies generally remain unburied three or four days.

Premature INTERMENT. Notwithstanding the customs above recited; still, in many places, and on many occasions in all places, too much precipitation attends this last office; or if not precipitation, a neglect of due precautions in regard to the body. In general, indeed, the most improper treatment that can be imagined is adopted, and many a person made to descend into the grave before he has sighed his last breath. The histories related by Hildanus, by Camerarius, by Horstius, by Macrobius in his *Somnium Scipionis*, by Plato in his *Republic*, by Valerius Maximus, and by a great many modern authors, leave us no doubt respecting the dangers or misconduct of such precipitation. It must appear astonishing that the attention of mankind has been after all so little roused by an idea the most terrible that can be conceived on this side of eternity. If nature recoils from the idea of death, with what horror must she start at the thought of death anticipated; precipitated by inattention—a return of life in darkness, distraction, and despair—then death repeated under agonies unspeakable! To revive nailed up in a coffin! The brain can scarce sustain the reflection in our coolest safest moments.

According to present usage, as soon as the semblance of death appears, the chamber of the sick is deserted by friends, relatives, and physicians; and the apparently dead, though frequently living, body, is committed to the management of an ignorant and unfeeling nurse, whose care extends no farther than laying the limbs straight, and securing her accustomed perquisites. The bed-cloaths are immediately removed, and the body is exposed to the air. This, when cold,

must

Interment. must extinguish any spark of life that may remain, and which, by a different treatment, might have been kindled into flame; or it may only continue to repress it, and the unhappy person afterwards revive amidst the horrors of the tomb.

The difference between the end of a weak life and the commencement of death, is so small, and the uncertainty of the signs of the latter is so well established both by ancient and modern authors who have turned their attention to that important object, that we can scarcely suppose undertakers capable of distinguishing an apparent from a real death. Animals which sleep during winter show no signs of life; in this case, circulation is only suspended: but were it annihilated, the vital spirit does not so easily lose its action as the other fluids of the body; and the principle of life, which long survives the appearance of death, may re-animate a body in which the action of all the organs seems to be at an end. But how difficult is it to determine whether this principle may not be revived? It has been found impossible to recal to life some animals suffocated by mephitic vapours, tho' they appeared less affected than others who have revived. Coldness, heaviness of the body, a leaden livid colour, with a yellowness in the visage, are all very uncertain signs: Mr Zimmerman observed them all upon the body of a criminal, who fainted through the dread of that punishment which he had merited. He was shaken, dragged about, and turned in the same manner as dead bodies are, without the least signs of resistance; and yet at the end of 24 hours he was recalled to life by means of volatile alkali.

A Director of the coach-office at Dijon, named *Colinet*, was supposed to be dead, and the news of this event was spread throughout the whole city. One of his friends, who was desirous of seeing him at the moment when he was about to be buried, having looked at him for a considerable time, thought he perceived some remains of sensibility in the muscles of the face. He therefore made an attempt to bring him to life by spirituous liquors, in which he succeeded; and this director enjoyed afterwards for a long time that life which he owed to his friend. This remarkable circumstance was much like those of Empedocles and Asclepiades. These instances would perhaps be more frequent, were men of skill and abilities called in cases of sudden death, in which people of ordinary knowledge are often deceived by false appearances.

A man may fall into a syncope, and may remain in that condition three or even eight days. People in this situation have been known to come to life when deposited among the dead. A boy belonging to the hospital at Cassel appeared to have breathed his last: he was carried into the hall where the dead were exposed, and was wrapped up in a piece of canvas. Some time after, recovering from his lethargy, he recollected the place in which he had been deposited, and crawling towards the door knocked against it with his foot. This noise was luckily heard by the sentinel, who soon perceiving the motion of the canvas called for assistance. The youth was immediately conveyed to a warm bed, and soon perfectly recovered. Had his body been confined by close bandages or ligatures, he would not have been able, in all probability, to make himself be heard: his unavailing efforts would have made him

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again fall into a syncope, and he would have been thus *interment* buried alive.

We must not be astonished that the servants of an hospital should take a syncope for a real death, since even the most enlightened people have fallen into errors of the same kind. Dr John Schmid relates, that a young girl, seven years of age, after being afflicted for some weeks with a violent cough, was all of a sudden freed from this troublesome malady, and appeared to be in perfect health. But some days after, while playing with her companions, this child fell down in an instant as if struck by lightning. A death-like paleness was diffused over her face and arms; she had no apparent pulse, her temples were sunk, and she showed no signs of sensation when shaken or pinched. A physician, who was called, and who believed her to be dead, in compliance with the repeated and pressing request of her parents, attempted, though without any hopes, to recal her to life; and at length, after several vain efforts, he made the soles of her feet be smartly rubbed with a brush dipped in strong pickle. At the end of three quarters of an hour she was observed to sigh; she was then made to swallow some spirituous liquor; and she was soon after restored to life, much to the joy of her disconsolate parents.—A certain man having undertaken a journey, in order to see his brother, on his arrival at his house found him dead. This news affected him so much, that it brought on a most dreadful syncope, and he himself was supposed to be in the like situation. After the usual means had been employed to recal him to life, it was agreed that his body should be dissected, to discover the cause of so sudden a death; but the supposed dead person overhearing this proposal, opened his eyes, started up, and immediately betook himself to his heels.—Cardinal E-spinola, prime minister to Philip II. was not so fortunate; for we read in the *Memoirs of Amelot de la Houffai*, that he put his hand to the knife with which he was opened in order to be embalmed. In short, almost every one knows that Vesalius, the father of anatomy, having been sent for to open a woman subject to hysterics, who was supposed to be dead, he perceived, on making the first incision, by her motion and cries, that she was still alive; that this circumstance rendered him so odious, that he was obliged to fly; and that he was so much affected by it, that he died soon after.—On this occasion, we cannot forbear to add an event more recent, but no less melancholy. The Abbé Prevost, so well known by his writings and the singularities of his life, was seized with a fit of the apoplexy, in the forest of Chantilly, on the 23d of October 1763. His body was carried to the nearest village, and the officers of justice were proceeding to open it, when a cry which he sent forth frightened all the assistants, and convinced the surgeon that the Abbé was not dead; but it was too late to save him, as he had already received the mortal wound.

Even in old age, when life seems to have been gradually drawing to a close, the appearances of death are often fallacious. A lady in Cornwall, more than 80 years of age, who had been a considerable time declining, took to her bed, and in a few days seemingly expired in the morning. As she had often desired not to be buried till she had been two days dead, her request was to have been regularly complied with by her relations.

*Lond.
Chron.
Vol. IV.
p. 456*

Interment. tions. All that saw her looked upon her as dead, and the report was current through the whole place; nay, a gentleman of the town actually wrote to his friend in the island of Scilly that she was deceased. But one of those who were paying the last kind office of humanity to her remains, perceived some warmth about the middle of the back; and acquainting her friends with it, they applied a mirror to her mouth; but, after repeated trials, could not observe it in the least stained; her under jaw was likewise fallen, as the common phrase is; and, in short, she had every appearance of a dead person. All this time she had not been stripped or dressed; but the windows were opened, as is usual in the chambers of the deceased. In the evening the heat seemed to increase, and at length she was perceived to breathe.

In short, not only the ordinary signs are very uncertain, but we may say the same of the stiffness of the limbs, which may be convulsive; of the dilation of the pupil of the eye, which may proceed from the same cause; of putrefaction, which may equally attack some parts of a living body; and of several others. Haller, convinced of the uncertainty of all these signs, proposes a new one, which he considers as infallible. "If the person (says he) be still in life, the mouth will immediately shut of itself, because the contraction of the muscles of the jaw will awaken their irritability." The jaw, however, may be deprived of its irritability though a man may not be dead. Life is preserved a long time in the passage of the intestines. The sign pointed out by Dr Fothergill appears to deserve more attention. "If the air blown into the mouth (says this physician) passes freely through all the alimentary channel, it affords a strong presumption that the irritability of the internal sphincters is destroyed, and consequently that life is at an end." These signs, which deserve to be confirmed by new experiments, are doubtless not known to undertakers.

The difficulty of distinguishing a person apparently dead from one who is really so, has, in all countries where bodies have been interred too precipitately, rendered it necessary for the law to assist humanity. Of several regulations made on this subject, we shall quote only a few of the most recent; such as those of Arras in 1772; of Mantua in 1774; of the Grand Duke of Tuscany in 1775; of the Senechaussée of Sivrai, in Poitou, in 1777; and of the Parliament of Metz in the same year. To give an idea of the rest, it will be sufficient to relate only that of Tuscany. By this edict, the Grand Duke forbids the precipitate interment of persons who die suddenly. He orders the Magistrates of Health to be informed, that physicians and surgeons may examine the body; that they may use every endeavour to recal it to life, if possible, or to discover the cause of its death; and that they shall make a report of their procedure to a certain tribunal. On this occasion, the Magistrate of Health orders the dead not to be covered until the moment they are about to be buried, except so far as decency requires; observing always that the body be not closely confined, and that nothing may compress the jugular veins and the carotid arteries. He forbids people to be interred according to the ancient method; and requires that the arms and the hands should be left extended, and that they

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should not be folded or placed cross-wise upon the breast. He forbids, above all, to press the jaws one against the other; or to fill the mouth and nostrils with cotton, or other stuffing. Lastly, he recommends not to cover the visage with any kind of cloth until the body is deposited in its coffin.

We shall conclude this article by subjoining, from Dr Hawes's *Address to the Public* on his subject, a few of the cases in which this fallacious appearance of death is most likely to happen, together with the respective modes of treatment which he recommends.

In apoplectic and fainting fits, and in those arising from any violent agitation of mind, and also when opium or spirituous liquors have been taken in too great a quantity, there is reason to believe that the appearance of death has been frequently mistaken for the reality. In these cases, the means recommended by the *Humane Society for the Recovery of Drowned Persons* should be persevered in for several hours, and bleeding, which in similar circumstances has sometimes proved pernicious, should be used with great caution. (See the article DROWNING.) In the two latter instances it will be highly expedient, with a view of counteracting the soporific effects of opium and spirits, to convey into the stomach, by a proper tube, a solution of tartar emetic, and by various other means to excite vomiting.

From the number of children carried off by convulsions, and the certainty arising from undoubted facts, that some who have in appearance died from that cause have been recovered; there is the greatest reason for concluding, that many, in consequence of this disease, have been prematurely numbered among the dead; and that the fond parent, by neglecting the means of recalling life, has often been the guiltless executioner of her own offspring. To prevent the commission of such dreadful mistakes, no child, whose life has been apparently extinguished by convulsions, should be consigned to the grave till the means of recovery above recommended in apoplexies, &c. have been tried; and, if possible, under the direction of some skilful practitioner of medicine, who may vary them as circumstances shall require.

When fevers arise in weak habits, or when the cure of them has been principally attempted by means of depletion, the consequent debility is often very great, and the patient sometimes sinks into a state which bears so close an affinity to that of death, that there is reason to suspect it has too often deceived the bystanders, and induced them to send for the undertaker when they should have had recourse to the succours of medicine. In such cases, volatiles, *eau de luce* for example, should be applied to the nose, rubbed on the temples, and sprinkled often about the bed; hot flannels, moistened with a strong solution of camphorated spirit, may likewise be applied over the breast, and renewed every quarter of an hour; and as soon as the patient is able to swallow, a tea-spoonful of the strongest cordial should be given every five minutes.

The same methods may also be used with propriety in the small-pox when the pustules sink, and death apparently ensues; and likewise in any other acute diseases, when the vital functions are suspended from a similar cause.

INTERMITTENT, or INTERMITTING, Fever
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Interment,
Intermittent

Interpolation
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Interrogation.

such fevers as go off and soon return again, in opposition to those which are continual Sec. (the *Index* subjoined to) MEDICINE.

INTERPOLATION, among critics, denotes a spurious passage inserted into the writings of some ancient author.

INTERPOSITION, the situation of a body between two others, so as to hide them, or prevent their action.

The eclipse of the sun is occasioned by an interposition of the moon between the sun and us; and that of the moon by the interposition of the earth between the sun and moon. See ECLIPSE.

INTERPRETER, a person who explains the thoughts, words, or writings, of some other, which before were unintelligible.—The word *interpretes*, according to Isidore, is composed of the preposition *inter*, and *partes*, as signifying a person in the middle betwixt two parties, to make them mutually understand each others thoughts: others derive it from *inter*, and *pres*, i. e. *fidejussor*; q. d. a person who serves as security between two others who do not understand one another.

There have been great debates about interpreting Scripture. The Romanists contend, that it belongs absolutely to the church: adding, that where she is silent, reason may be consulted; but where she speaks, reason is to be disregarded. The Protestants generally allow reason the sovereign judge, or interpreter; tho' some among them have a strong regard to synods, and others to the authority of the primitive fathers. Lastly, others have recourse to the Spirit within every person to interpret for them; which is what Bochart calls *αποδιδίς το πνευματι*.

INTERREGNUM, the time during which the throne is vacant in elective kingdoms; for in such as are hereditary, like ours, there is no such thing as an interregnum.

INTERREX, the magistrate who governs during an interregnum.

This magistrate was established in old Rome, and was almost as ancient as the city itself: after the death of Romulus there was an interregnum of a year, during which the senators were each interrex in their turn, five days a piece.

After the establishment of consuls and a commonwealth, though there were no kings, yet the name and function of *interrex* was still preserved: for, when the magistrates were absent, or there was any irregularity in their election, or they had abdicated, so that the comitia could not be held; provided they were unwilling to create a dictator, they made an interrex, whose office and authority was to last five days; after which they made another. To the interrex was delegated all the regal and consular authority, and he performed all their functions. He assembled the senate, held comitia or courts, and took care that the election of magistrates was according to rules. Indeed at first it was not the custom of the interrex to hold comitia, at least we have no instance of it in the Roman history. The patricians alone had the right of electing an interrex; but this office fell with the republic, when the emperors made themselves masters of every thing.

INTERROGATION, ΕΑΡΩΤΗΣΙΣ, a figure of rhe-

toric, in which the passion of the speaker introduces a thing by way of question, to make its truth more conspicuous.

The interrogation is a kind of apostrophe which the speaker makes to himself; and it must be owned, that this figure is suited to express most passions and emotions of the mind; it serves also to press and bear down an adversary, and generally adds an uncommon briskness, action, force, and variety, to discourse.

INTERROGATION, in grammar, is a point which serves to distinguish such parts of a discourse, where the author speaks as if he were asking questions. Its form is this (?).

INTERROGATORIES, in law, are particular questions demanded of witnesses brought in to be examined in a cause, especially in the court of chancery. And these interrogatories must be exhibited by the parties in suit on each side; which are either direct for the party that produces them, or counter, on behalf of the adverse party; and generally both plaintiff and defendant may exhibit, direct, and counter, or cross interrogatories. They are to be pertinent, and only to the points necessary; and either drawn or perused by counsel, and to be signed by them.

INTERSECTION, in mathematics, the cutting of one line, or plane, by another; or the point or line wherein two lines, or two planes, cut each other.

The mutual intersection of two planes is a right line. The centre of a circle is in the intersection of two diameters. The central point of a regular or irregular figure of four sides, is the point of intersection of the two diagonals.

The equinoxes happen when the sun is in the intersections of the equator and ecliptic.

INTERSPINALES. See ANATOMY, *Table of the Muscles*.

INTERVAL, the distance or space between two extremes, either in time or place. The word comes from the Latin *intervallum*, which, according to Isidore, signifies the space *inter fossam & murum*, "between the ditch and the wall:" others note, that the flakes or piles, driven into the ground in the ancient Roman bulwarks, were called *valla*; and the interstices or vacancy between them, *intervalla*.

INTERVAL, in music. The distance between any given sound and another, strictly speaking, is neither measured by any common standard of extension nor duration; but either by immediate sensation, or by computing the difference between the numbers of vibrations produced by two or more sonorous bodies, in the act of sounding, during the same given time. As the vibrations are slower and fewer during the same instant, for example, the sound is proportionally lower or graver; on the contrary, as during the same period the vibrations increase in number and velocity, the sounds are proportionably higher or more acute. An interval in music, therefore, is properly the difference between the number of vibrations produced by one sonorous body of a certain magnitude and texture, and of those produced by another of a different magnitude and texture in the same time.

Intervals are divided into consonant and dissonant. A consonant interval is that whose extremes, or whose highest and lowest sounds, when simultaneously heard, coalesce in the ear, and produce an agreeable sensation called

Interrogatories
||
Interval.

Interval called by Lord Kames a *tertium quid*. A dissonant interval, on the contrary, is that whose extremes, simultaneously heard, far from coalescing in the ear, and producing one agreeable sensation, are each of them plainly distinguished from the other, produce a grating effect upon the sense, and repel each other with an irreconcilable hostility. In proportion as the vibrations of different sonorous bodies, or of the same sonorous body in different modes, more or less frequently coincide during the same given time, the chords are more or less perfect, and consequently the intervals more or less consonant. When these vibrations never coincide at all in the same given time, the discord is consummate, and consequently the interval absolutely dissonant.

Intervals are not only divided according to their natures, but also with respect to their degrees. In this view, they are either enharmonic, chromatic, or diatonic. Of these therefore in their order, from the least to the greatest.

An enharmonic interval is what they call the *eighth part of a tone*, or the difference between a major and minor semitone generally distinguished by the name of a *comma*. Commas, however, are of three different kinds, as their quantities are more or less; but since these differences cannot be ascertained without long and intricate computations, it is not necessary for us to attempt an investigation, whose pursuit is so unpleasant, and whose result attended with so little utility. It has by musicians been generally called the *eighth part of a tone*; but they ought to have considered, that a comma is by no means the object of auricular perception, and that its estimate can only be formed by calculation. For a more minute disquisition of this matter, our readers may consult the article *COMMA* in the Musical Dictionary, or the article *MUSIC* in this Work, Notes, *n* and *s*. A chromatic interval consists properly of a minor semitone, but may also admit the major. A diatonic interval consists of a semitone-major at least, but may consist of any number of tones within the octave. When an octave higher or lower is assumed, it is obvious that we enter into another scale which is either higher or lower, but still a repetition of the former degrees of sound.

Intervals again are either simple or compound. All the intervals within any one octave are simple; such as the second major or minor, the third, the fourth, the fifth, the sixth, the seventh, &c. of these afterwards. All intervals whose extremes are contained in different octaves, such as the ninth, the tenth, the eleventh, the twelfth, the thirteenth, the fourteenth, the fifteenth, &c. may be termed *compound intervals*.

The semitone either exactly or nearly divides the tone into two equal parts. In the theory of harmonical computation three kinds of semitones are recognised, viz. the greatest, the intermediate, and the smallest semitone. But in practice, to which these explanations are chiefly adapted, the semitone is only distinguished into major and minor. The semitone major is the difference between the third major and the fourth, as EF. Its ratio is as 15 to 16, and it forms the least of all diatonic intervals.

The semitone minor consists of the difference between the third major and minor; it may be marked

in the same degree by a sharp or a flat, and it only forms a chromatic interval; its ratio is as 24 to 25.

Though some distinction is made between these semitones by the manner of marking them, yet on the organ and harpsichord no distinction can be made; nor is there any thing more common for us than to say, that D sharp in rising is E flat in descending, and so through the whole diapason above or below; besides, the semitone is sometimes major and sometimes minor, sometimes diatonic and sometimes chromatic, according to the different modes in which we compose or practise; yet in practice these are called *semitones* minor, which are marked by sharps or flats, without changing the degree; and semitones major are those which form the interval of a second.

With respect to the three semitones recognised in theory, the greatest semitone is the difference between a tone major and a semitone minor; and its ratio is as 25 to 27. The intermediate semitone is the difference between a semitone major and a tone major; and its ratio is as 128 to 135. In a word, the small semitone consists of the difference between the greatest and the intermediate semitone; and its ratio is as 125 to 128.

Of all these intervals, there is only the semitone major, which is sometimes admitted as a second in harmony.

The interval of a tone which characterises the diatonic species of composition, is either major or minor. The former consists of the difference between the fourth and fifth; and its ratio is as 8 to 9: and the latter, whose ratio is as 9 to 10, results from the difference between the third minor and the fourth.

Seconds are distinguished into four kinds: two of which are not in practice sufficiently momentous to be mentioned. The second major is synonymous with the intervals of a tone; but as that tone may be either major or minor, its ratio may be either as 8 to 9, or as 9 to 10.

The second minor consists of the distance from B to C, or from EF; and its ratio is as 15 to 16.

The third is so called, because it consists of two gradations, or three diatonic sounds, as from G to B ascending, or from A to C, inclusive of the extremes; of which the first is a third major, composed of two full tones, and its ratio as 4 to 5; the second, a third minor consisting of a tone and a semitone major, and its ratio as 5 to 6.

The fourth has by some been reckoned an imperfect, but more justly by others a perfect, chord. It consists of three diatonic degrees, but take its name from the four different sounds of which it is formed; or, in other words, the number by which it is denominated includes the extremes. It is composed of a tone major, a tone minor, and a semitone major, as from C to F ascending; its ratio as 3 to 4.

The fifth next to the octave, is, perhaps, the most perfect interval, as least susceptible of alteration. The number from whence it assumes its name likewise includes its extremes. It consists of two tones major, one minor, and a semitone major, as from A to E ascending; its ratio is as 2 to 3.

The sixth is not found among the natural order of consonances, but only admitted by combination. It is not here necessary to mention its various distinctions

Interval. and uses, as we only give an account of intervals in general.

The sixth major consists of four tones and a semitone major, as from G to E ascending; its ratio is as 3 to 5. The sixth minor contains three tones and two semitones major, as from E to C ascending; its ratio is as 5 to 8.

The seventh, as a reduplication of the second, is a dissonance. When major, is consists diatonically of five tones, three major, and two minor; and a major semitone, as from C to B ascending; its ratio is as 8 to 15.

When minor, it consists of four tones, three major and one minor, and two major semitones, as from E to D ascending; its ratio is as 5 to 9.

The octave is the most perfect of all chords, and in many cases hardly to be distinguished by the ear from an unison; that is to say, from that coincidence of sound produced by two musical strings, whose matter, lengths, diameters, and tensions, are the same. As the vibrations of two strings in unison during any given time, are precisely coincident; so whilst the lowest extreme of the octave vibrates once, the highest vibrates twice; and consequently its ratio is as 1 to 2, as from c to C ascending. It consists of six full tones and two semitones major. Its name is derived from the Latin *octo*, "eight;" because that number likewise includes its extremes. It may likewise be divided into twelve semitones. It contains the whole diatonic scale; and every series above or below consists only of the same returning sounds. From whence the natures, distances, and powers, of every interval greater than the octave, as the ninth, the tenth, the eleventh, the twelfth, the thirteenth, the fourteenth, the fifteenth, the triple octave, &c. may easily be computed.

During our past observations upon the term *interval*, we have either wholly neglected our faithful associate M. Rousseau, or only maintained a distant and momentary intercourse with him. We now propose to pay him a more permanent and familiar visit; but as he is engaged in the dispute between the Pythagoreans and Aristoxenians, we think it more advantageous to decline the controversy, and to follow him, after having escaped the fray, like a gentleman and a scholar. Having put the partizans of Aristoxenus to silence, let us, with him, forsake the lists of combat, nor stain his triumph by insulting the falling champions.

"We divide (says he) as did the ancients, intervals into consonant and dissonant. The consonances are perfect or imperfect*; dissonances are either such by nature, or become such by accident. There are only two intervals naturally dissonant, viz, the second and seventh, including their octaves or replications; nay, still these two may be reduced to one alone, as the seventh is properly no more than a replication of the second; for B, the seventh above the lowest C, where we have generally begun the scale, is really an octave above B, the note immediately below that C; and consequently the interval between these lower sounds is no more than that of a second major, to which all dissonances may therefore be ultimately reduced, whether considered as major or minor; but

even all the consonances may become dissonant by accident. See DISCORD.

"Besides, every interval is either simple or reduplicated. Simple intervals are such as the limits of a single octave comprehend. Every interval which surpasses this extent is reduplicated; that is to say, compounded of one or more octaves, and of the simple interval whose replication it is.

"Simple intervals are likewise divided into direct and inverted. Take any simple interval whatever for a direct one; the quantity which, added to itself, is required to complete the octave, will be found an inverted interval; and the same observation holds reciprocally true of such as are inverted.

"There are only six kinds of simple intervals; of which three contain such quantities, as, added to the other three, are required to complete the octave; and of consequence likewise the one must be inversions of the other. If you take at first the smallest intervals, you will have, in the order of direct intervals, the second, the third, and fourth; for inverted, the seventh, the sixth, and fifth. Suppose these to be direct, the others will be inverted; every thing here is reciprocal.

"To find the name of any interval whatever, it is only necessary to add the denomination of unity to the degree which it contains. Thus the interval of one degree shall give a second; of two, a third; of three, a fourth; of seven, an octave; of nine, a tenth, &c. But this is not sufficient to determine an interval with accuracy; for under the same name it may be either major or minor, true or false, diminished or redundant.

"The consonances which are imperfect, and the two natural dissonances, may be major or minor; which, without changing their degree, occasions in the interval the difference of a semitone; so that if, from a minor interval, we still deduce a semitone, it becomes an interval diminished; if, by a semitone, we increase a major interval, it becomes an interval redundant.

"The perfect consonances are by their nature invariable. When their intervals are such as they ought to be, we call them *just*, *true*; and if we dilate or contract this interval by a semitone, the consonance is termed *false*, and becomes a dissonance; *redundant*, if the semitone be added; *diminished*, if it be abstracted. We improperly give the name of a *false fifth* to the fifth diminished; this is taking the genus for the species; the fifth redundant is every jot as false as the diminished, it is even more so in every respect."

In the Musical Dictionary, plate C, fig. 2. may be seen a table of all the simple intervals practicable in music, with their names, their degrees, their values and their ratios.

Having ascertained the distinction between major and minor intervals, it is only necessary to add, that these may be natural or artificial. Of the natural we have already given some account, by ascertaining the distances and ratios of such as have been mentioned. Of the artificial, we may observe, that they are such as change their position from what it naturally is in the diatonic scale, to what the conveniency of composition or transposition requires it to be. A note

* See Consonance.

Intestate
||
Intrigue.

thus artificially heightened by a semitone, together with the character which expresses that elevation, is called a *sharp*; on the contrary, a note artificially depressed by a semitone, together with the character by which that depression is signified, is called a *flat*. The character which restores a note thus depressed or raised to its primary state, is called a *natural*. Major or minor intervals, as they prevail, characterise the major or minor mode. See *MODE*.

INTESTATE, in law, a person that dies without making a will.

INTESTINA, in the *Linnean System*, an order of worms. See *ZOOLOGY*.

INTESTINES, **INTESTINA**, in *anatomy*, the *guts* or *bowels*; those hollow, membranous, cylindrical parts, extended from the right orifice of the stomach to the anus; by which the chyle is conveyed to the lacteals, and the excrements are voided. See *ANATOMY*, n° 93.

INTONATION, in music, the action of sounding the notes in the scale with the voice, or any other given order of musical tones. Intonation may be either true or false, either too high or too low, either too sharp or too flat; and then this word *intonation*, attended with an epithet, must be understood concerning the manner of performing the notes.

In executing an air, to form the sounds, and preserve the intervals as they are marked with justness and accuracy, is no inconsiderable difficulty, and scarcely practicable, but by the assistance of one common idea, to which, as to their ultimate test, these sounds and intervals must be referred: these common ideas are those of the key, and the mode in which the performer is engaged; and from the word *tone*, which is sometimes used in a sense almost identical with that of the key, the word *intonation* may perhaps be derived. It may also be deduced from the word *diatonic*, as in that scale it is most frequently conversant; a scale which appears most convenient and most natural to the voice. We feel more difficulty in our intonation of such intervals as are greater or lesser than those of the diatonic order; because, in the first case, the glottis and vocal organs are modified by gradations too large; or too complex, in the second.

INTRENCHMENT, in the military art, any work that fortifies a post against an enemy who attacks. It is generally taken for a ditch or trench with a parapet. Intrenchments are sometimes made of fascines with earth thrown over them, of gabions, hogsheds, or bags filled with earth, to cover the men from the enemy's fire.

INTRIGUE, an assemblage of events or circumstances, occurring in an affair, and perplexing the persons concerned in it. In this sense, it is used to signify the nodus or plot of a play or romance; or that point wherein the principal characters are most embarrassed through the artifice and opposition of certain persons, or the unfortunate falling out of certain accidents and circumstances.

In tragedy, comedy, or an epic poem, there are always two designs. The first and principal is that of the hero of the piece: the second contains the designs of all those who oppose him. These opposite causes produce opposite effects, to wit, the efforts of

the hero for the execution of his design, and the efforts of those who thwart it. As those causes and designs are the beginning of the action, so these efforts are the middle, and there form a knot or difficulty which we call the *intrigue*, that makes the greatest part of the poem. It lasts as long as the mind of the reader or hearer is suspended about the event of those opposite efforts: the solution or catastrophe commences when the knot begins to unravel and the difficulties and doubts begin to clear up.

The intrigue of the *Iliad* is twofold. The first comprehends three days fighting in Achilles's absence, and consists on the one side in the resistance of Agamemnon and the Greeks, and on the other in the inexorable temper of Achilles. The death of Patroclus unravels this intrigue, and makes the beginning of a second. Achilles resolves to be revenged, but Hector opposes his design; and this forms the second intrigue, which is the last day's battle.

In the *Æneid* there are also two intrigues. The first is taken up in the voyage and landing of Æneas in Italy; the second is his establishment there: the opposition he met with from Juno in both these undertakings, forms the intrigue.

As to the choice of the intrigue, and the manner of unravelling it, it is certain they ought both to spring naturally from the ground and subject of the poem. Bossu gives us three manners of forming the intrigue of a poem: the first is that already mentioned; the second is taken from the fable and design of the poet; in the third the intrigue is so laid, as that the solution follows from it of course.

INTRINSIC, a term applied to the real and genuine values and properties, &c. of any thing, in opposition to their *extrinsic* or *apparent* values.

INTRODUCTION, in general, signifies any thing which tends to make another in some measure known before we have leisure to examine it thoroughly; and hence it is used on a great variety of occasions. Thus we speak of the introduction of one person to another; the introduction to a book, &c.—It is also used to signify the actual motion of any body out of one place into another, when that motion has been occasioned by some other body.

INTRODUCTION, in oratory. See *ORATORY*, n° 26.

INTUITION, among logicians, the act whereby the mind perceives the agreement or disagreement of two ideas, immediately by themselves, without the intervention of any other; in which case the mind perceives the truth as the eye does the light, only by being directed towards it. See *LOGIC*, n° 25. 27.

INTUITIVE EVIDENCE, is that which results from *INTUITION*. Dr Campbell distinguishes different sorts of *intuitive* evidence: one resulting purely from intellection, or that faculty which others have called intuition; another kind arising from consciousness; and a third sort from that new-named faculty *Common Sense*, which this ingenious writer as well as several others contend to be a distinct original source of knowledge, whilst others refer its supposed office to the *intuitive* power of the understanding.

INVALID, a person wounded, maimed, or disabled for action by age.

At Chelsea and Greenwich are magnificent Hospitals

Intrigue
||
Invalid.

Invested
Inventory.

TALS or rather colleges, built for the reception and accommodation of *invalids*, or soldiers and seamen worn out in the service.

We have also twenty independent companies of *invalids*, dispersed in the several forts and garrisons.

At Paris is a college of the same kind, called *les Invalides*, which is accounted one of the finest buildings in that city.

INVECTED, in heraldry, denotes a thing fluted or furrowed. See HERALDRY.

INVECTIVE, in rhetoric, differs from reproof, as the latter proceeds from a friend, and is intended for the good of the person reproofed; whereas the *invective* is the work of an enemy, and entirely designed to vex and give uneasiness to the person against whom it is directed.

INVEGES (Augustin), a learned Sicilian Jesuit, wrote in Italian an History of the city of Palermo, and other works, which are esteemed. He died in 1677, aged 82.

INVENTION, denotes the act of finding any thing new, or even the thing thus found. Thus we say, *the invention of gunpowder, of printing, &c.* The *alcove* is a modern invention owing to the Moors.

The Doric, Ionic, and Corinthian orders, are of Greek invention; the Tuscan and Composite of Latin invention. Janſon ab Almeloveen has written an *Onomasticon* of inventions; wherein are shown, in an alphabetical order, the names of the inventors, and the time, place, &c. where they are made. Pancirollus has a treatise of old inventions that are lost, and new ones that have been made; Polydore Virgil has also published eight books of the inventors of things. *De Inventoribus Rerum*.

INVENTION is also used for the finding of a thing hidden. The Romish church celebrates a feast on the 4th of May, under the title of, *Invention of the Holy Cross*.

INVENTION is also used for subtilty of mind, or somewhat peculiar to a man's genius, which leads him to a discovery of things new; in which sense we say, *a man of invention*.

INVENTION, in painting, is the choice which the painter makes of the objects that are to enter the composition of his piece. See PAINTING.

INVENTION, in poetry, is applied to whatever the poet adds to the history of the subject he has chosen; as well as to the new turn he gives it. See POETRY.

INVENTION, in rhetoric, signifies the finding out and choosing of certain arguments which the orator is to use for the proving or illustrating his point, moving their passions, or conciliating the minds of his hearers. Invention, according to Cicero, is the principal part of oratory: he wrote four books *De Inventione*, whereof we have but two remaining. See ORATORY.

INVENTORY, in law, a catalogue or schedule orderly made, of all a deceased person's goods and chattels, at the time of his death, with their value: appraised by indifferent persons, which every executor or administrator is obliged to exhibit to the ordinary at such time as he shall appoint.

By 21 Hen. VIII. c. v. executors and administrators are to deliver in upon oath to the ordinary, indented inventories, one part of which is to remain with the ordinary, and the other part with the executor or ad-

ministrator; this is required for the benefit of the creditors and legatees, that the executor or administrator may not conceal any part of the personal estate from them. The statute ordains, that the inventory shall be exhibited within three months after the person's decease; yet it may be done afterwards, for the ordinary may dispense with the time, and even with its being ever exhibited, as in cases where the creditors are paid, and the will is executed.

INVERARY, a parliament-town of Scotland, in Argyleshire, pleasantly situated on a small bay formed by the junction of the river Ary with Loch-fin, where the latter is a mile in width and 60 fathoms in depth. Here is a castle, the principal seat of the dukes of Argyle, chief of the Campbells. It is a modern building of a quadrangular form, with a round tower at each corner; and in the middle rises a square one glazed on every side to give light to the staircase and galleries, which has from without rather a heavy appearance. This castle is built of a coarse *lapis ollaris* brought from the other side of Loch-fin; and is of the same kind with that found in Norway, of which the king of Denmark's palace is built. The founder of the castle, the late Duke Archibald, also formed the design of an entire new town, upon a commodious elegant plan, becoming the dignity of the capital of Argyleshire, a country most admirably situated for fisheries and navigation. The town hath been rebuilt agreeable to the original design; and the inhabitants are well lodged in houses of stone, lime, and slate. They are fully employed in arts and manufactures, and plentifully supplied in the produce of sea and land.—The planting around Inverary is extensive beyond conception, and admirably variegated; every crevice, glen, and mountain, displaying taste and good sense.

The value of the immense wood at this place, for the various purposes of bark, charcoal, forges, paling, furniture, house and ship building, is thus estimated by Mr Knox: "Some of the beech are from 9 to 12 feet in circumference, and the pines from 6 to 9; but these being comparatively few, we shall state the medium girth of 2,000,000 trees planted within these last hundred years, at 3 feet, and the medium value at 4s. which produces L.400,000; and this, for the most part, upon grounds unfit for the plough, being chiefly composed of hills and rock." One of these hills rises immediately from the house a great height, in the form of a pyramid, and is clothed to the summit with a thick wood of vigorous ornamental trees. On this summit or point Archibald duke of Argyle built a Gothic tower or observatory, where he sometimes amused himself. The ascent by the road seems to be half a mile, and the perpendicular height about 800 feet.

INVERBERVIE, or BERVIE, a town of Kincardineshire or the Mearns, 13 miles N. E. from Montrose. It lies between two small hills, which terminate in high cliffs towards the sea; and though a royal borough, and the only one in the country, it is but a small place, the inhabitants of which are chiefly employed in making thread.

INVERKEITHING, a parliament-town of Scotland, in the county of Fife, situated on the northern shore of the Frith of Forth, in W. Long. 3. 15. N. Lat. 56. 5. It was much favoured by William, who granted

Inverary
Inverkeithing.

Inverlochy, granted its first charter. He extended its liberties considerably, and in the time of David I. it became a royal residence. The Moubrays had large possessions here, which were forfeited in the reign of Robert II. The Franciscans had a convent in this town; and, according to Sir Robert Sibbald, the Dominicans had another. This town has a considerable trade in coal and other articles.

INVERLOCHY, an ancient castle in the neighbourhood of *Fort-William* in Invernessshire. It is adorned with large round towers; and, by the mode of building, seems to have been the work of the English in the time of Edward I. who laid large fines on the Scotch barons for the purpose of erecting new castles. The largest of these towers is called *Cumin's*. But long prior to these ruins Inverlochy, according to Boece, had been a place of great note, a most opulent city, remarkable for the vast resort of French and Spaniards, probably on account of trade. It was also a seat of the kings of Scotland, for here Achaius in the year 790 signed (as is reported) the league offensive and defensive between himself and Charlemagne. In after-times it was utterly destroyed by the Danes, and never again restored.

In the neighbourhood of this place were fought two fierce battles, one between Donald Balloch brother to Alexander lord of the isles, who with a great power invaded Lochaber in the year 1427: he was met by the earls of Mar and Caithness; the last was slain, and their forces totally defeated. Balloch returned to the isles with vast booty, the object of those plundering chieftains. Here also the Campbells under the marquis of Argyll, in February 1645, received from Montrose an overthrow fatal to numbers of that gallant name. Fifteen hundred fell in the action and in the pursuit, with the loss only of three to the royalists. Sir Thomas Ogilvie, the friend of Montrose, died of his wounds. His death suppressed all joy for the victory.

INVERNESS, capital of a county of the same name in Scotland, is a parliament-town, finely seated on the river Ness, over which there is a stone-bridge of seven arches, in W. Long. 4°. N. Lat. 57. 36. It is large, well-built, and very populous, being the last town of any note in Britain. As there are always regular troops in its neighbourhood, there is a great air of politeness, a plentiful market, and more money and business stirring than could have been expected in such a remote part of the island. The country in the neighbourhood is remarkably well cultivated; and its produce clearly shows that the soil and climate are not despicable. The salmon-fishery in the Ness is very considerable, and is let to London fishmongers. Some branches both of the woollen, linen, and hemp manufacture, are also carried on here; and, in consequence of the excellent military roads, there is a great proportion of inland trade. But besides all this, Inverness is a port with 20 creeks dependent upon it, part on the Murray Frith to the east, and part on the north of the town, reaching even the south border of the county of Caithness. Inverness has several good schools; and it is now intended to erect an academy there on an extensive scale. The inhabitants speak the Erse and English language promiscuously. On an eminence near the town are the remains of a castle, where, according

to some historians, the famous Macbeth murdered Duncan his royal guest.

INVERNESS-SHIRE, a county of Scotland, bounded on the north by Ross-shire; on the east by the shires of Nairne, Murray, and Aberdeen; on the south, by those of Perth and Argyll; and on the west, by the Atlantic Ocean. Its extent from north to south is above 50 miles; from east to west about 80.—The northern part of this county is very mountainous and barren. In the district of Glenelg are seen the ruins of several ancient circular buildings, similar to those in the Western Isles, Sutherland, and Ross shires; concerning the uses of which antiquaries are not agreed. In their outward appearance, they are round and tapering like glass-houses. In the heart of the wall, which is perpendicular within, there are horizontal galleries going quite round and connected by stairs. These ascend toward the top, which is open. They are all built of stone, without lime or mortar of any kind. They have no opening outward, except the doors and the top; but there are several in the inside, as windows to the galleries. From Bernera barracks, in this district, proceeds the military road to Inverness.

This county is nearly divided by water; and it appears from a late survey, that by means of a canal uniting Loch Ness, Loch Oich, Loch Lochy, and Lochiel or Loch Eil, a communication might be readily opened here between the two seas. In this tract, Fort George, Fort Augustus, and Fort William, form what is called the *Chain of Forts* across the island. By means of Fort George on the east, all entrance up the Frith towards Inverness is prevented; Fort Augustus curbs the inhabitants midway; and Fort William is a check to any attempts in the west. Detachments are made from all these garrisons to Inverness, Bernera barracks opposite to the isle of Skie, and castle Duart in the isle of Mull. Other small parties are also scattered in huts throughout the country, to prevent the stealing of cattle.

The river Ness, upon which the capital of the shire is situated, is the outlet of the great lake called *Loch Ness*. This beautiful lake is 22 miles in length, and for the most part one in breadth. It is screened on the north-west by the lofty mountains of Urquhart and Meal-fourvony, and bordered with coppices of birch and oak. The adjacent hills are adorned with many extensive forests of pine; which afford shelter to the cattle, and are the retreat of flags and deer. There is much cultivation and improvement on the banks of Loch Ness; and the pasture-grounds in the neighbouring valleys are excellent.—From the south, the river Fyers descends towards this lake. Over this river there is built a stupendous bridge, on two opposite rocks; the top of the arch is above 100 feet from the level of the water. A little below the bridge is the celebrated Fall of Fyers, where a great body of water darts through a narrow gap between two rocks, then falls over a vast precipice into the bottom of the chasm, where the foam rises and fills the air like a great cloud of smoke.

Loch Oich is a narrow lake, stretching about four miles from east to west. It is adorned with some small wooded islands, and is surrounded with ancient trees. Near this is the family-seat of Glengary, surrounded by

Inverness.

by natural woods of full grown fir, which extend nine or ten miles along the banks of the river Gary. The waters of Loch Oich flow through Loch Ness into the eastern sea.—Loch Lochy transmits its waters in an opposite direction, this being the highest part of the vast flat tract that here stretches from sea to sea. This extensive lake is above ten miles in length, and from one to two in breadth. From the west, the waters of Loch Arckel descend into this lake. Out of it runs the river Lochy, which about a mile below its issue from the lake, receives the Spean, a considerable river, over which there is a magnificent bridge, built by General Wade, about two miles above the place where it falls into the Lochy. These united streams traversing the plains of Lochaber, after a course of five or six miles fall into Loch Eil.

A few miles to the south-east of Loch Lochy is Glenroy or King's Vale. The north-east end of this valley opens on Loch Spey. A small river passes along the bottom of the vale, accompanied by a modern road. On the declivity of the mountains, about a mile from the river, on either hand are seen several parallel roads of great antiquity. On the north-west side, five of these roads run parallel and close by each other. On the opposite side are three other roads exactly similar. These roads are 30 feet broad, all perfectly horizontal, and extend eight or nine miles in length. Their destination or use has baffled the conjectures of antiquaries.—Not far from Fort Augustus soars the pointed summit of Bennevish, which is esteemed the highest mountain in Britain, rising more than 4300 feet above the level of the sea.—In the districts of Moydart, Arasaick, Morer, and Knoydart, there are numerous bays and creeks, along the coast, many of which might be excellent fishing stations.

The southern part of this county is very mountainous, and is supposed to be the most elevated ground in Scotland. From its numerous lakes many streams descend toward both seas. In the extensive district called *Badenoch* lies Loch Spey, the source of the great river Spey, which proceeding eastward with an increasing stream, enters the shire of Murray at Rothiemurchus, after having expanded into a fine lake. Not far from this is seen the lofty top of Cairngorm; a mountain celebrated for its beautiful rock-crystals of various tints. These are much esteemed by lapidaries; and some of them, having the lustre of fine gems, bring a very high price. Limestone, iron-ore, and some traces of different minerals, are found in the county; but no mines have yet been worked with much success. Its rivers and lakes afford abundance of salmon and trout. The extensive plains which surround the lakes are in general fertile; and the high grounds feed many sheep and black cattle, the rearing and selling of which is the chief trade of the inhabitants.—By the present spirited exertions of the gentlemen in this populous county, the commerce and the industry of the inhabitants have of late been greatly increased; and to facilitate the communication with other parts, application has been made to parliament for leave to levy a tax on the proprietors of land for improving the roads and erecting bridges in this extensive shire. The commonalty in the high parts of the county and on the western shore speak Gaelic; but the people of fashion in

N^o 168.

Inverness and its vicinity use the English language, and pronounce it with remarkable propriety.

INVERSE, is applied to a manner of working the rule of three. See ARITHMETIC, n^o 13.

INVERSION, the act whereby any thing is inverted or turned backwards. Problems in geometry and arithmetic are often proved by inversion; that is, by a contrary rule or operation.

INVERSION, in grammar, is where the words of a phrase are ranged in a manner not so natural as they might be. For an instance: "Of all vices, the most abominable, and that which least becomes a man, is impurity." Here is an inversion; the natural order being this: Impurity is the most abominable of all vices, and that which least becomes a man.—An inversion is not always disagreeable, but sometimes has a good effect.

INVERTED, in music, is derived from the Latin preposition *in*, and *vertere*, "to turn any thing a contrary way." The analogy of this term, and its use in music, will appear more obvious from the sequel.

It signifies a change in the order of the notes which form a chord; or in the parts which compose harmony: which happens by substituting in the bass, those sounds which ought to have been in the upper part: an operation not only rendered practicable, but greatly facilitated, by the resemblance which one note has to another in different octaves; whence we derive the power of exchanging one octave for another with so much propriety and success, or by substituting in the extremes those which ought to have occupied the middle station; and *vite versa*.

It is certain, that in every chord there must be a fundamental and natural order, which is the same with that of its generation: but the circumstances of succession, taste, expression, the beauty of melody; and variety, the approximation of harmony, frequently oblige the composer to change that order by inverting the chords, and of consequence the disposition of the parts.

As three things may be arranged in six different orders, and four things in twenty-four; it would seem at first, that a perfect chord should be susceptible of six inversions, and a dissonant chord of twenty-four; since one is composed of four and the other of three sounds, and since inversion consists only in a transposition of octaves. But it must be observed, that in harmony all the different dispositions of acuter sounds are not reckoned as inversions, whilst the same sounds remain in the lower parts. Thus, these two orders of the perfect chord *ut mi sol*, or C E G, and *ut sol mi*, or C G E, are only taken for the same inversion, and only bear the same name; this reduces the whole of inversions of which a perfect chord is susceptible to three; that is to say, to as many inversions as the chord contains different sounds: for the replications of the same sound are here reckoned as nothing.

Every time, therefore, when the fundamental bass is heard in the lowest parts, or if the fundamental bass be retrenched, every time when the natural order is preserved in the chords, the harmony is direct. As soon as that order is changed, or as soon as the fundamental sounds, without being in the lower parts, are heard in some of the others, the harmony is *inverted*. It is an inversion of the chord, when the fundamental sound

Inverso

Inverted.

Inverted sound is transposed; it is likewise an inversion of the harmony, when the treble or any other part moves as the bass ought to have done.

Investing.

Every where, where a direct chord can be well placed, its inversions will likewise be so with respect to the harmony; for it is still the same fundamental succession. Thus, at every note of the fundamental bass, it is in the power of the composer to arrange the chord at his pleasure, and of consequence every moment to produce different inversions; provided that he does not change the regular and fundamental succession; provided also, that the dissonances may always be prepared and resolved in the same parts where they are first heard, that the sensible note may always ascend, and that such false relations may be avoided as would be too harsh upon the ear in the same part. This is the key of these mysterious distinctions which composers have made between those chords where the treble is syncopated, and those in which the bass ought to be syncopated; as, for instance, between the ninth and the second: it is thus that in the first the chord is direct, and the dissonance in the treble; in the others, the chord is reversed, and the dissonance in the bass.

With respect to chords by supposition, greater precaution is necessary in inverting them. As the sound which they add to the bass is absolutely foreign to the harmony; it is often only tolerably there, on account of its vast distance from the other sounds, which renders the dissonance less harsh. But if these added sounds should happen to be transposed in the higher parts, as it sometimes does; if this transposition be not performed with much art, it may produce a very bad effect; and never can this be happily practised without taking away some other sound from the chord. See, at the article *ACCORD* in the Musical Dictionary, the cases when *inversion* may be practised, and the choice of such as are proper.

The perfect knowledge of *inversion* depends on art and study alone: the choice is a different matter; to this an ear and a taste are necessary; experience of the different effects are likewise indispensable; and though the choice of inversions be indifferent with respect to the foundation of the harmony, it is by no means such in regard of the effect and expression. It is certain, that the fundamental bass is formed to support the harmony, and to prevail beneath. Every time therefore when the order is changed and the harmony inverted, there ought to be good reasons for it: without which, the composer will fall into the vice of our more recent music, where the melody of the treble is often like what the bass should be, and the bass always like that of the treble, where every thing is confounded, reversed, disordered, without any other reason than to subvert the established order, and to spoil the harmony.

INVESTIGATION, properly denotes the searching or finding out any thing by the tracts or prints of the feet; whence mathematicians, schoolmen, and grammarians, come to use the term in their respective researches.

INVESTING a PLACE, is when a general, having an intention to besiege it, detaches a body of horse to possess all the avenues; blocking up the garri-son, and preventing relief from getting into the place, till the army and artillery are got up to form the siege.

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INVESTITURE, in law, a giving livery of seisin or possession. There was anciently a great variety of ceremonies used upon investitures; as at first they were made by a certain form of words, and afterwards by such things as had the greatest resemblance to the thing to be transferred: thus, where lands were intended to pass, a turf, &c. was delivered by the granter to the grantee. In the church, it was customary for princes to make investiture of ecclesiastical benefices, by delivering to the person they had chosen a pastoral staff and a ring.

Investiture
Invocation.

INULA, ELECAMpane: A genus of the polygama superflua order, belonging to the syngenesia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The receptacle is naked; the pappus simple; the antheræ, at the base, ending in two bristles. There are 22 species, of which the helenium, or common elecampane, is the most remarkable. It is a native of Britain; but is cultivated in gardens for the sake of the root, which is used in medicine. The root is perennial, thick, branching, and of a strong odour. The lower leaves are eight or nine inches long, and four broad in the middle, rough on their upper side, but downy on the under side. The stalks rise about four feet high, and divide toward the top into several smaller branches, garnished with oblong oval leaves indented on their edges, ending in acute points. Each branch is crowned with one large yellow radiated flower, succeeded by narrow four-cornered seeds, covered with down. It may be propagated in autumn by seeds or offsets.

Medicinal Uses, &c. The root of elecampane, especially when dry, has an agreeable aromatic smell; its taste, on chewing, is glutinous, and as it were somewhat rancid; in a little time it discovers an aromatic bitterness, which by degrees becomes considerably acrid and pungent. It possesses the general virtues of alexipharmacs; and is principally recommended for promoting expectoration in humoral asthma and coughs. Liberally taken, it is said to excite urine, and to loosen the belly. In some parts of Germany, large quantities of this root are candied, and used as a stomachic for strengthening the tone of the viscera in general, and for attenuating tenacious juices. Spirituous liquors extract its virtues in greater perfection than watery ones. The former scarce elevate any thing in distillation: with the latter an essential oil arises, which concretes into white flakes; this possesses at first the flavour of the elecampane, but is very apt to loose it in keeping. Outwardly applied, a decoction of it is said to cure the itch. The root bruised and macerated in urine with balls of ashes and whortle-berries, dyes a blue colour.

INUNDATÆ, the name of the 15th order in Linnaeus's fragments of a natural method; consisting of plants which grow in the water. See *BOTANY*, p. 460.

INUNDATION, a sudden overflowing of the dry land by the waters of the ocean, rivers, lakes, springs, or rains.

INVOCATION, in theology, the act of adoring God, and especially of addressing him in prayer for his assistance and protection. See the articles *ADORATION* and *PRAYER*.

The difference between the invocation of God and
O o of

Invocation
||
Io.

of the saints, as practised by the Papists, is thus explained in the catechism of the council of Trent. "We beg of God, (says the catechism,) to give us good things, and to deliver us from evil; but we pray to the saints, to intercede with God and obtain those things which we stand in need of. Hence we use different forms in praying to God and to the saints: to the former we say, *bear us, have mercy on us*; to the latter we only say, *pray for us*." The council of Trent expressly teaches, that the saints who reign with Jesus Christ offer up their prayers to God for men; and condemn those who maintain the contrary doctrine. The Protestants reject and censure this practice as contrary to scripture, deny the truth of the fact, and think it highly unreasonable to suppose that a limited finite being should be in a manner omnipresent, and at one and the same time hear and attend to the prayers that are offered to him in England, China, and Peru; and from thence infer, that if the saints cannot hear their requests, it is inconsistent with common sense to address any kind of prayer to them.

INVOCATION, in poetry, an address at the beginning of a poem, wherein the poet calls for the assistance of some divinity, particularly of his muse, or the deity of poetry.

INVOICE, an account in writing of the particulars of merchandize, with their value, custom, charges, &c. transmitted by one merchant to another in a distant country.

INVOLUCRUM, among botanists, expresses that sort of cup which surrounds a number of flowers together, every one of which has beside this general cup its own particular perianthium. The involucrum consists of a multitude of little leaves disposed in a radiated manner. See CALYX.

INVOLUTION, in algebra, the raising any quantity from its root to any height or power assigned. See ALGEBRA.

IO, (fab. hist.) daughter of Inachus, or according to others of Jasus or Pirene, was priestess of Juno at Argos. Jupiter became enamoured of her; but Juno, jealous of his intrigues, discovered the object of his affection, and surprised him in the company of Io. Jupiter changed his mistress into a beautiful heifer; and the goddess, who well knew the fraud, obtained from her husband the animal whose beauty she had condescended to commend. Juno commanded the hundred eyed Argus to watch the heifer; but Jupiter, anxious for the situation of Io, sent Mercury to destroy Argus, and to restore her to liberty. Io, freed from the vigilance of Argus, was now persecuted by Juno, who sent one of the Furies to torment her. She wandered over the greatest part of the earth and crossed over the sea, till at last she stopped on the banks of the Nile, still exposed to the unceasing torments of the Fury. Here she entreated Jupiter to restore her to her natural form; and when the god had changed her from a heifer into a woman, she brought forth Epaphus. Afterwards she married Telegonus king of Egypt. or Osiris according to others; and she treated her subjects with such mildness and humanity, that after death she received divine honours, and was worshipped under the name of *Isis*. According to Herodotus, Io was carried away

by Phœnician merchants, who wished to make reprisals for Europa who had been stolen from them by the Greeks.

Joab
||
Joan.

JOAB, general of the army of king David, defeated the Syrians and the other enemies of David, and took the fort of Zion from the Jebusites, who, thinking it impregnable, committed it to the care of the lame and blind, whom they placed on the walls. He signalized himself in all David's wars, but was guilty of basely murdering Abner and Amasa. He procured a reconciliation between Absalom and David; and afterwards slew Absalom, contrary to the express orders of the king. He at length joined Adonijah's party; and was put to death by the order of Solomon, 1014 B. C.

JOACHIMITES, in church history, the disciples of Joachim a Cistercian monk, who was an abbot of Flora in Calabria, and a great pretender to inspiration.

The Joachimites were particularly fond of certain ternaries: The Father, they said, operated from the beginning till the coming of the Son; the Son, from that time to theirs, which was the year 1260; and from that time the Holy Spirit was to operate in his turn. They also divided every thing relating to men, to doctrine, and the manner of living, into three classes, according to the three persons in the Trinity: The first ternary was that of men; of whom the first class was that of married men, which had lasted during the whole period of the Father; the second was that of clerks, which had lasted during the time of the Son; and the last was that of the monks, in which there was to be an uncommon effusion of grace by the Holy Spirit: The second ternary was that of doctrine, viz. the Old Testament, the New, and the everlasting Gospel; the first they ascribed to the Father, the second to the Son, and the third to the Holy Spirit: A third ternary consisted in the manner of living, viz. under the Father, men lived according to the flesh; under the Son, they lived according to the flesh and the spirit; and under the Holy Ghost, they were to live according to the spirit only.

JOAN (Pope), called by Platina *John VIII.* is said to have held the holy see between Leo IV. who died in 855, and Benedict III. who died in 858. Marianus Scotus says, she sat two years five months and four days. Numberless have been the controversies, fables, and conjectures, relating to this pope. It is said that a German girl, pretending to be a man, went to Athens, where she made great progress in the sciences; and afterward came to Rome in the same habit. As she had a quick genius, and spoke with a good grace in the public disputations and lectures, her great learning was admired, and every one loved her extremely; so that after the death of Leo, she was chosen pope, and performed all offices as such. Whilst she was in possession of this high dignity, she was got with child; and as she was going in a solemn procession to the Lateran church, she was delivered of that child, between the Coliseum and St Clement's church, in a most public street, before a crowd of people, and died on the spot, in 857. By way of embellishing this story, may be added the precaution reported to have been afterward taken to avoid such another accident.

Joan,
Joanna.

dent. After the election of a pope, he was placed on a chair with an open seat, called the *groping chair*, when a deacon came most devoutly behind and satisfied himself of the pontiff's sex by feeling. This precaution, however, has been long deemed unnecessary, because the cardinals now always get bastards enough to establish their virility before they arrive at the pontificate.

Joan d'Arc, or the Maid of Orleans, whose heroic behaviour in reanimating the expiring valour of the French nation, though by the most superstitious means, (pretending to be inspired), deserved a better fate. She was burnt by the English as a sorceress in 1411, aged 24. See FRANCE, n° 101.

JOANNA (St), one of the Comora islands in the Indian ocean, E. Long. 44. 15. S. Lat. 12. 30. The north side shoots out into two points, 26 miles asunder, between which there is a great bay. This island is a proper place of refreshment for the East India ships, whose crews, when ill of the scurvy, soon recover by the use of limes, lemons, and oranges, and from the air of the land. The town where the king resides is at the east side of the island; and though it is three quarters of a mile in length, it does not contain above 200 houses. Their principal houses are built with stone, with a quadrangle in the middle, and are only one story high. All the other houses, or rather huts, are slightly composed of plastered reeds; and yet the mosques are tolerable structures, very neat and clean in the inside. The horned cattle are a kind of buffaloes, having a large hump on their shoulders, which is very delicious eating; but there is not one horse, mule, nor ass, in all the island.—The original natives, in number about 7000, occupy the hills, and are generally at war with the Arabian interlopers, who established themselves on the sea-coast by conquest, and are about 3000 in number. These latter are described by an anonymous letter-writer * as poor miserable beings, who not being able to carry on any extensive degree of cultivation, on account of their being exposed to the depredations of the mountaineer natives, subsist chiefly by supplying the India ships who touch there for refreshment with a few cattle and tropical fruits. According to the same writer, the descriptions of this island and its inhabitants by the Abbé Raynal and Major Rooke, are not only exaggerated but erroneous; neither the country being so picturesque in beautiful landscapes as the former describes it, nor the inhabitants meriting the respectable character given of them by the latter. As we are not, however, competent to decide in this matter, we shall subjoin the entertaining account given by the Major.

" Though Joanna is not the largest, yet it may be reckoned the principal of the Comora Islands; it claims sovereignty over, and exacts tribute from, all the others: these pretensions it is however sometimes obliged to assert by the sword, and at present meditates an expedition against Mayotta, which is in a state of rebellion. The natives on being asked the cause of their war with that people, reply, "Mayotta like America." They get their supplies of arms and ammunition from ships that touch here; and the arrival of so large a fleet as the present will prove very seasonable to them, as it is customary for all to make presents of arms and powder to the prince when he

pays a visit on board, which he does to every one. A salute is the compliment due on that occasion; but as our guns are shotted, an apology is made for the omission of that ceremony, and the prince readily admits of it, provided he receives a number of cartridges equal to the guns that would have been fired.

" The king lives at a town about 12 miles off on the east side of the island: two princes of the blood reside here; who on going their round of visits fail not to ask for every thing they see which strikes their fancy; and of course the honour of making a present to a prince, induces one at first readily to grant what they request: but no sooner is that done than they make fresh applications, till we are reduced to the rude necessity of putting the negative on most of them. These great personages are very richly dressed and attended by a numerous suite of slaves, who, like their princely masters, are much struck with the objects they see, but use less ceremony in their manner of obtaining them. These black princes (for that is the complexion of them and all the inhabitants) have by some means or other obtained the titles of Prince of Wales and Prince Will: the former has probably been called so by some jocular Englishmen as being the heir apparent, and the natives have adopted the term, not the only one they borrow from us. They have an officer styled Purser Jack, who seems to be at the head of the finance-department. Of dukes they have a prodigious number, who entertain us at their hotels for a dollar per day, and give us for dinner very good rice and curry. These noblemen, together with a numerous tribe of others of all ranks, make the earliest application to every one to solicit the honour of his company and custom; even before the ship has let go its anchor, they come along side in their canoes, and produce written certificates of their honesty and abilities from those who have been here before: the purport of which is to inform you that the bearer has given them good cheer, washed their linen well, and supplied their ship punctually with all sorts of refreshments.

" The effect is striking and singular on entering the road to see a vast number of canoes, which are made of trunks of trees hollowed out, with three or four black fellows in each, their faces turned towards the front of the canoe, with paddles formed like a spade, digging away in the water, and moving with no small velocity. To keep these cockle shells steady, and prevent them from upsetting, they have what is termed an outrigger: it is composed of two poles laid across the upper part of the canoe, and extending several feet beyond the edges thereof on each side, joined at the extremities by two flat pieces of wood, so that it appears like a square frame laid across the canoe: they are very long, but so narrow that one person can only sit breadthways.

" The price of every article here is regulated; and each ship has its contractor who engages to supply it with necessaries at the established rate.

" We find no other animals for our sea provisions but bullocks, goats, and fowls: the season for oranges is past, but we get most other tropical fruits; and whatever we want, have only to give in a list to a duke, and he provides us therewith. This, it will be thought, is a new character for a duke to appear in, and such it seems to be; but it is in fact only owing to the mode: they

Wide Letter
from a Gen-
tleman on
board an
Indian
giving an
account of
the island
Joanna,
8vo, 1780.

Travels to
the Coast of
Arabia Fe-
lix, lct. 4.

Joanna.

Joanna,
Job

are their own stewards, and dispose of the produce of their estates themselves, which noblemen of other countries do by the intermediate aid of an agent: they at least act consistently with their characters by an urbanity of manners, which one is surprised to meet with in a people inhabiting a small spot secluded from the rest of the civilized world. They have a regular form of government, and exercise the Mahometan religion: both were introduced by Arabians who passed over from the continent and subdued the country. The original Joanna natives are by no means thoroughly reconciled to this usurpation, and still look upon their conquerors with an evil eye. Like their sentiments, so are the colours of these two races of men very different: the Arabs have not so deep a tinge as the others, being of a copper complexion with better features and a more animated countenance. They consider a black streak under the eyes as ornamental; and this they make every day at their toilettes with a painting brush dipped in a kind of ointment. The custom of chewing the betel nut prevails greatly here, as in most of the Eastern countries; and answers to the fashion of smoking tobacco or taking snuff with us, except that with them it is more general. No one is without a purse or bag of betel; and it is looked on as a piece of civility to offer it to your friend when you meet him or take leave. See the articles *ARABIA* and *BETEL*.

"Their religion licenses a plurality of wives and likewise concubines. They are extremely jealous of them, and never allow any man to see the women: but female strangers are admitted into the haram; and some English ladies, whose curiosity has led them there, make favourable reports of their beauty, and richness of apparel displayed in a profusion of ornaments of gold, silver, and beads, in form of necklaces, bracelets, and ear-rings; they wear half a dozen or more in each through holes bored all along the outer rim of the ear.

"The men seem not to look with an eye of indifference on our fair countrywomen notwithstanding they are of so different a complexion. One of the first rank among them being much smitten with an English young lady, wished to make a purchase of her at the price of 5000 dollars; but on being informed that the lady would fetch at least 20 times that sum in India, he lamented that her value was so far superior to what he could afford to give.

"These people are very temperate and abstemious, wine being forbidden them by the law of Mahomed. They are frequent in prayer, attending their mosques three or four times a-day. We are allowed to enter them on condition of taking off our shoes. These buildings are regular, but quite plain. In prayer the people prostrate themselves on the ground, frequently kissing it and expressing very fervent devotion.

"Joanna town is close to the sea, situated at the foot of a very hill, and about a mile and a half in circuit. The houses are inclosed either with high stone walls or palings made with a kind of reed; and the streets are little narrow alleys, extremely intricate and forming a perfect labyrinth. The better kind of houses are built of stone within a court-yard, have a portico to shield them from the sun, and one long lofty room where they receive guests, the other apartments being sacred to the women. The sides of their rooms are covered

with a number of small mirrors, bits of china ware, Joanna. and other little ornaments that they procure from ships which come here to refresh: the most superb of them are furnished with cane sofas covered with chintz and satin mattresses. Most of the people speak a little English: they profess a particular regard for our nation, and are very fond of repeating to you, that "Joanna-man and English-man all brothers;" and never fail to ask "how King George do?" In general they appear to be a courteous and well disposed people, and very fair and honest in their dealings, though there are amongst them, as in all other nations, some viciously inclined; and theft is much practised by the lower class, notwithstanding the punishment of it is very exemplary, being amputation of both hands of the delinquent.

"The inhabitants of this island, like those of most hot and tropical countries, are indolent, and do not improve by their labour the richness of that soil with which nature has blessed them. Climate here favours vegetation to such a degree as requires little toil in the husbandman; but that little is denied: so that beyond oranges, bananas, pine-apples, cocoa nuts, yams, and purslain (all growing spontaneously), few vegetables are met with. Nor are the natural beauties of the island inferior to its other advantages of plenty and fertility; the face of the country is very picturesque and pleasing, its scenes being drawn by the bold strokes of Nature's masterly pencil: lofty mountains clothed to their very summits, deep and rugged valleys adorned by frequent cataracts, cascades, woods, rocks, and rivulets, intermixed in "gay theatric pride," form the landscape. Groves are seen extending over the plains to the very edge of the sea, formed principally by the cocoa-nut trees, whose long and naked stems leave a clear uninterrupted passage beneath; while their tufted and overspreading tops form a thick shade above, and keep off the scorching rays of the sun. In these we pitch our tents and enjoy a short relief from the ennui of a tedious voyage.

"In the interior part of the island, surrounded by mountains of a prodigious height, and about 15 miles from this town, is situated a sacred lake half a mile in circumference. The adjacent hills covered with lofty trees, and the unfrequented solitude of the place, seem more calculated to inspire religious awe in those who visit this sequestered spot, than any sanctity that is to be discovered in a parcel of wild ducks inhabiting it, which are deified and worshipped by the original natives, who consult them as their oracles on all important affairs, and sacrifice to them. Being extremely averse to conduct strangers there, they stipulate that all guns shall be left at a place five miles from the lake. The worship paid to these birds ensures their safety and tranquillity; and rendering them of course perfectly tame, they fearlessly approach any one who goes there. The Arabian part of the islanders hold this barbarous superstition in the utmost detestation; but dare not forbid the practice of it, so bigotted to it are the others."

JOB, or *Book of Job*, a canonical book of the Old Testament, containing a narrative of a series of misfortunes which happened to a man whose name was *Job*, as a trial of his virtue and patience; together with the conferences he had with his cruel friends on the

Jobber
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Jode.

the subject of his misfortunes, and the manner in which he was restored to ease and happiness. This book is filled with those noble, bold, and figurative expressions, which constitute the very soul of poetry.

Many of the Jewish rabbins pretend that this relation is altogether a fiction: others think it a simple narrative of a matter of fact, just as it happened: while a third sort of critics acknowledge, that the groundwork of the story is true, but that it is wrote in a poetical strain, and decorated with peculiar circumstances, to render the narration more profitable and entertaining.

The time is not set down in which Job lived. Some have thought that he was much ancients than Moses, because the law is never cited by Job or his friends, and because it is related that Job himself offered sacrifices. Some imagine that this book was wrote by himself; others say, that Job wrote it originally in Syriac or Arabic, and that Moses translated it into Hebrew: but the rabbins generally pronounce Moses to be the author of it; and many Christian writers are of the same opinion.

JOBBER, a person who undertakes jobs, or small pieces of work.

In some statutes, jobber is used for a person who buys and sells for others. See **BROKER**.

JOBGING, the business of a jobber.

Stock-Jobbing, denotes the practice of trafficking in the public funds, or of buying and selling stock with a view to its rise or fall. The term is commonly applied to the illegal practice of buying and selling stock for time, or of accounting for the differences in the rise or fall of any particular stock for a stipulated time, whether the buyer or seller be possessed of any such real stock or not. See *Stock Broker*.

JOBERT (Lewis), a pious and learned Jesuit, born at Paris in 1647. He distinguished himself as a preacher; and besides several other tracts wrote a treatise entitled *La Science des Medailles*, which is in good esteem. He died in 1719; and the best edition of this work is that of Paris in 1739, 2 vols 12mo.

JOCASTA, (fab. hist.) a daughter of Menœceus, who married Laius king of Thebes, by whom she had Œdipus. She afterwards married her son Œdipus, without knowing who he was, and had by him Eteocles, Polynices, &c. When she discovered that she had married her own son and been guilty of incest, she hanged herself in despair. She is called *Epicastra* by some mythologists.

JOCKEY, in the management of horses; the person who trims up, and rides about horses for sale.

JODE (Peter de), an engraver of some note, was a native of Antwerp. He received his first instructions in the art of engraving from Henry Goltzius; and afterwards went to Italy, in order to complete his studies from the works of the great masters. He engraved several plates in that country from different painters; and returned to Antwerp about the year 1601, where he resided till the time of his death, which happened A. D. 1634. His works are very numerous, and possess a considerable share of merit.

JODE (Peter de, the younger), was son to the former, and born in 1606. From his father he learned

Jodelle
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Joghia.

the art of engraving, and surpassed him in taste and the facility of handling the graver; though he can scarcely be said to have equalled him in correctness of drawing, especially when confined to the naked parts of the human figure. It does not appear that he went to Italy; but he accompanied his father to Paris, where they engraved conjointly a considerable number of plates for M. Bonfant, and Le Sieur L'Imago. His most capital performances are from Rubens and Vandyck. Bafan says of him, that in several of his engravings he has "equalled the best engravers, and in others he has sunk below himself." The time of his death is not known. He left a son, *Arnold*, who was also an engraver, but of very inferior merit.

JODELLE (Stephen), lord of Limodin, was born at Paris in 1532; and distinguished himself so greatly by his poetical talents, that he was reckoned one of the Pleiades celebrated by Ronfard. He is said to be the first Frenchman who wrote plays in his own language according to the ancient form. He was remarkably ready at composition, writing without study or labour; and was well skilled in polite arts and genteel exercises. In his younger years he embraced the reformed religion, and wrote a satire on the mass in 100 Latin verses; yet all of a sudden returned to that mass again. He died in 1579, very poor.

JOEL, or the *Prophecy of Joel*, a canonical book of the Old Testament. Joel was the son of Pethuel, and the second of the twelve lesser prophets. The style of this prophet is figurative, strong, and expressive. He upbraids the Israelites for their idolatry, and foretells the calamities they should suffer as the punishment of that sin: but he endeavours to support them with the comfort that their miseries should have an end upon their reformation and repentance. Some writers, inferring the order of time in which the minor prophets lived from the order in which they are placed in the Hebrew copies, conclude that Joel prophesied before Amos, who was contemporary with Uzziah, king of Judah. Archbishop Usher makes this inference from Joel's foretelling that drought, chap. i. which Amos mentions as having happened, chap. iv. 7, 8, 9. If we consider the main design of Joel's prophecy, we shall be apt to conclude, that it was uttered after the captivity of the ten tribes; for he directs his discourse only to Judah, and speaks distinctly of the sacrifices and oblations that were daily made in the temple.

JOGHIS, a sect of heathen religious in the East Indies, who never marry, nor hold any thing in private property; but live on alms, and practise strange severities on themselves.

They are subject to a general, who sends them from one country to another to preach. They are, properly, a kind of penitent pilgrims, and are supposed to be a branch of the ancient Gymnosophists.

They frequent, principally, such places as are consecrated by the devotion of the people, and pretend to live several days together without eating or drinking. After having gone through a course of discipline for a certain time, they look on themselves as impeccable, and privileged to do any thing; upon which they give a loose to their passions, and run into all manner of debauchery.

JO-

Jogues.

JOGUES, or YOOGS, certain ages, æras, or periods, of extraordinary length, in the chronology of the Hindoos. They are four in number; of which the following is an account, extracted from Halhed's Preface to the Code of Gentoo Laws, p. xxxvi.

1. The *Suttee Jogue* (or age of purity) is said to have lasted three million two hundred thousand years; and they hold that the life of man was extended in that age to one hundred thousand years, and that his stature was twenty-one cubits.

2. The *Tirtah Jogue* (in which one third of mankind was corrupted) they suppose to have consisted of two million four hundred thousand years, and that men lived to the age of ten thousand years.

3. The *Dwapaar Jogue* (in which half of the human race became depraved) endured one million six hundred thousand years, and the life of man was then reduced to a thousand years.

4. The *Collee Jogue* (in which all mankind are corrupted, or rather lessened, for that is the true meaning of *Collee*) is the present æra, which they suppose ordained to subsist four hundred thousand years, of which near five thousand are already past; and the life of man in that period is limited to one hundred years.

Concerning the Indian chronology, we have already had occasion to be pretty copious; see HINDOOS, n^o 19, 22. We shall here, however, subjoin Dr Robertson's observations on the above periods, from the Notes to his *Historical Disquisition concerning India*.

† P. 360.

"If (says he†) we suppose the computation of time in the Indian chronology to be made by solar or even by lunar years, nothing can be more extravagant in itself, or more repugnant to our mode of calculating the duration of the world, founded on sacred and infallible authority. From one circumstance, however, which merits attention, we may conclude, that the information which we have hitherto received concerning the chronology of the Hindoos is very incorrect. We have, as far as I know, only five original accounts of the different Jogues or æras of the Hindoos. The first is given by M. Roger, who received it from the Brahmins on the Coromandel coast. According to it, the *Suttee Jogue* is a period of one million seven hundred and twenty-eight thousand years; the *Tirtah Jogue* is one million two hundred and ninety-six thousand years; the *Dwapaar Jogue* is eight hundred and sixty-four thousand. The duration of the *Collee Jogue* he does not specify; (*Porte Ouverte*, p. 179.) The next is that of M. Bernier, who received it from the Brahmins of Benares. According to him, the duration of the *Suttee Jogue* was two million five hundred thousand years; that of the *Tirtah Jogue* one million two hundred thousand years; that of the *Dwapaar Jogue* is eight hundred and sixty-four thousand years. Concerning the period of the *Collee Jogue*, he likewise is silent; (*Voyages*, tom. ii. p. 160.) The third is that of Colonel Dow; according to which the *Suttee Jogue* is a period of fourteen million of years, the *Tirtah Jogue* one million eighty thousand, the *Dwapaar Jogue* seventy-two thousand, and the *Collee Jogue* thirty-six thousand years; (*Hist. of Hindost.* vol. i. p. 2.) The fourth account is that of M. Le Gentil, who received it from the Brahmins of the Coromandel coast; and as his information was acquired in the same part of India, and

derived from the same source with that of M. Roger, it agrees with his in every particular. (*Mem. de l'Acad. des Sciences pour 1772*, tom. ii. part i. p. 176.) The fifth is the account of Mr Halhed, which has been already given. From this discrepancy, not only of the total numbers, but of many of the articles in the different accounts, it is manifest that our information concerning Indian chronology is hitherto as uncertain as the whole system of it is wild and fabulous. To me it appears highly probable, that when we understand more thoroughly the principles upon which the fictitious æras or jogues of the Hindoos have been formed, that we may be more able to reconcile their chronology to the true mode of computing time, founded on the authority of the Old Testament; and may likewise find reason to conclude, that the account given by their astronomers of the situation of the heavenly bodies at the beginning of the *Collee Jogue*, is not established by actual observation, but the result of a retrospective calculation."

JOHN (St), the BAPTIST, the fore-runner of Jesus Christ, was the son of Zacharias and Elizabeth. He retired into a desert, where he lived on locusts and wild honey; and about the year 29 began to preach repentance, and to declare the coming of the Messiah. He baptized his disciples, and the following year Christ himself was baptized by him in the river Jordan. Some time after, having reproved Herod Antipas, who had a criminal correspondence with Herodias his brother Philip's wife, he was cast into prison, where he was beheaded. His head was brought to Herodias; who, according to St Jerome, pierced his tongue with the bodkin she used to fasten up her hair, to revenge herself after his death for the freedom of his reproofs.

JOHN (St), the apostle, or the evangelist, was the brother of St James the Great, and the son of Zebedee. He quitted the business of fishing to follow Jesus, and was his beloved disciple. He was witness to the actions and miracles of his Master; was present at his transfiguration on mount Tabor; and was with him in the garden of Olives. He was the only apostle who followed him to the cross; and to him Jesus left the care of his mother. He was also the first apostle who knew him again after his resurrection. He preached the faith in Asia; and principally resided at Ephesus, where he maintained the mother of our Lord. He is said to have founded the churches of Smyrna, Pergamus, Thyatira, Sardis, Philadelphia, and Laodicea. He is also said to have preached the gospel amongst the Parthians, and to have addressed his first epistle to that people. It is related, that, when at Rome, the emperor Domitian caused him to be thrown into a caldron of boiling oil, when he came out unhurt; on which he was banished to the isle of Patmos, where he wrote his Apocalypse. After the death of Domitian, he returned to Ephesus, where he composed his Gospel, about the year 96; and died there, in the reign of Trajan, about the year 100, aged 94.

Gospel of St John, a canonical book of the New Testament, containing a recital of the life, actions, doctrine, and death, of our Saviour Jesus Christ, written by St John the apostle and evangelist.

St John wrote his Gospel at Ephesus, after his return

Jogues, John.

John. turn from the isle of Patmos, at the desire of the Christians of Asia. St Jerome says, he would not undertake it, but on condition that they should appoint a public fast to implore the assistance of God; and that, the fast being ended, St John, filled with the Holy Ghost, broke out into these words, "In the beginning was the Word," &c. The ancients assign two reasons for this undertaking: the first is, because, in the other three Gospels, there was wanting the history of the beginning of Jesus Christ's preaching, till the imprisonment of John the Baptist, which therefore he applied himself particularly to relate. The second reason was, in order to remove the errors of the Corinthians, Ebionites, and other sects. But Mr Lampe and Dr Lardner have urged several reasons to show that St John did not write against Cerinthus or any other heretics in his Gospel.

Revelation of St JOHN. See APOCALYPSE.

John of Salisbury, bishop of Chartres in France, was born at Salisbury in Wiltshire, in the beginning of the 12th century. Where he imbibed the rudiments of his education, is unknown; but we learn, that in the year 1136, being then a youth, he was sent to Paris, where he studied under several eminent professors, and acquired considerable fame for his application and proficiency in rhetoric, poetry, divinity, and particularly in the learned languages. Thence he travelled to Italy: and, during his residence at Rome, was in high favour with pope Eugenio III. and his successor Adrian IV. After his return to England, he became the intimate friend and companion of the famous Thomas Becket, archbishop of Canterbury, whom he attended in his exile, and is said to have been present when that haughty prelate was murdered in his cathedral. What preferment he had in the church during this time, does not appear; but in 1176 he was promoted by king Henry II. to the bishopric of Chartres in France, where he died in 1182. This John of Salisbury was really a phenomenon. He was one of the first restorers of the Greek and Latin languages in Europe; a classical scholar, a philosopher, a learned divine, and an elegant Latin poet. He wrote several books; the principal of which are, his *Life of St Thomas of Canterbury*, a collection of letters, and *Polycricon*.

Pope JOHN XXII. a native of Cahors, before called *James d'Este*, was well skilled in the civil and canon law; and was elected pope after the death of Clement V. on the 7th of August 1316. He published the constitutions called *Clementines*, which were made by his predecessor; and drew up the other constitutions called *Extravagantes*. Lewis of Bavaria being elected emperor, John XXII. opposed him in favour of his competitor; which made much noise, and was attended with fatal consequences. That prince, in 1329, caused the antipope Peter de Corbiero, a cordelier, to be elected, who took the name of Nicholas V. and was supported by Michael de Cefenne, general of his order; but that antipope was the following year taken and carried to Avignon, where he begged pardon of the pope with a rope about his neck, and died in prison two or three years after. Under this pope arose the famous question among the cordeliers, called *the bread of the cordeliers*; which was, Whether those

monks had the property of the things given them, at the time they were making use of them? for example, Whether the bread belonged to them when they were eating it, or to the pope, or to the Roman church? This frivolous question gave great employment to the pope; as well as those which turned upon the colour, form, and stuff, of their habits, whether they ought to be white, grey, or black; whether the cowl ought to be pointed or round, large or small; whether their robes ought to be full, short, or long; of cloth, or of serge, &c. The disputes on all these minute trifles were carried so far between the minor brothers, that some of them were burned upon the occasion. He died at Avignon in 1334, aged 90.

JOHN, king of England. See ENGLAND, n° 135, 147.

JOHN of Fordoun. See FORDOUN.

JOHN of Gaunt, duke of Lancaster, a renowned general, father of Henry IV. king of England, died in 1438.

JOHN of Leyden, otherwise called *Buccold*. See ANABAPTISTS.

JOHN Sobieski of Poland, one of the greatest warriors in the 17th century, was, in 1665, made grand-marshal of the crown; and, in 1667, grand-general of the kingdom. His victories obtained over the Tartars and the Turks procured him the crown, to which he was elected in 1674. He was an encourager of arts and sciences, and the protector of learned men. He died in 1696, aged 72.

St JOHN's Day, the name of two Christian festivals; one observed on June 24th, kept in commemoration of the wonderful circumstances attending the birth of John the Baptist; and the other on December 27th, in honour of St John the evangelist.

St JOHN's Wort. See HYPERICUM.

JOHN's (St), an island of the East-Indies, and one of the Philippines, east of Mindanayo, from which it is separated by a narrow strait. E. Long. 125. 25. N. Lat. 7. 0.

JOHN's (St), an island of North-America, in the bay of St Lawrence, having New-Scotland on the south and west, and Cape Breton on the east. The British got possession of it when Louisbourg was surrendered to them, on July 26, 1758.

JOHNSON (BEN), one of the most considerable dramatic poets of the last age, whether we consider the number or the merit of his productions. He was born at Westminster in 1574, and was educated at the public school there under the great Camden. He was descended from a Scottish family; and his father, who lost his estate under Queen Mary, dying before our poet was born, and his mother marrying a bricklayer for her second husband, Ben was taken from school to work at his father-in-law's trade. Not being captivated with this employment, he went into the Low Countries, and distinguished himself in a military capacity. On his return to England, he entered himself at St John's college, Cambridge; and having killed a person in a duel, was condemned, and narrowly escaped execution. After this he turned actor; and Shakespeare is said to have first introduced him to the world, by recommending a play of his to the stage, after it had been rejected. His Alchymist gained him such reputation, that in 1619 he was, at the death of

Mr.

Johnson.

Mr Daniel, made poet-laureat to King James I. and master of arts at Oxford. As we do not find Johnson's oecomenical virtues any where recorded, it is the less to be wondered at, that after this we find him petitioning king Charles, on his accession, to enlarge his father's allowance of 100 merks into pounds; and quickly after we learn, that he was very poor and sick, lodging in an obscure alley: on which occasion it was, that Charles, being prevailed on in his favour, sent him ten guineas; which Ben receiving, said, "His majesty has sent me ten guineas, because I am poor and live in an alley; go and tell him, that his soul lives in an alley." He died in August 1637, aged 63 years, and was buried in Westminster-Abbey.—The most complete edition of his works was printed in 1756, in 7 vols 8vo.

JOHNSON (Samuel), an English divine, remarkable for his learning, and steadiness in suffering for the principles of the revolution in 1688. He was born in 1649; and, entering into orders, obtained in 1670 the rectory of Corringham in the hundreds of Essex, worth no more than L. 80 a year; which was the only church-preferment he ever had. The air of this place not agreeing with him, he was obliged to place a curate on the spot, at the expence of half his income, while he settled at London; a situation much more to his liking, as he had a strong propensity to politics. The times were turbulent: the duke of York declaring himself a Papist, his succession to the crown began to be warmly opposed; and Mr Johnson, who was naturally of no submissive temper, being made chaplain to lord William Russell, engaged the ecclesiastical champion for passive obedience Dr Hicks, in a treatise intitled *Julian the apostate*, &c. published in 1682. He was answered by Dr Hicks in a piece intitled *Jovian*, &c. To which he drew up, and printed, a reply, under the title of *Julian's arts to undermine and extirpate Christianity*, &c.; but by the advice of his friends suppressed the publication. For this unpublished work he was committed to prison; but not being able to procure a copy, the court prosecuted him for writing the first tract, condemned him to a fine of 500 merks, and to lie in prison until it was paid. By the assistance of Mr Hamden, who was his fellow-prisoner, he was enabled to run into farther troubles; for on the encampment of the army on Hounslow-heath in 1686, he printed and dispersed, *An humble and hearty address to all the Protestants in the present army*; for this he was sentenced to a second fine of 500 merks, to be degraded from the priesthood, to stand twice in the pillory, and to be whipped from Newgate to Tyburn. It happened luckily, that, in the degradation, they omitted to strip him of his cassock; which circumstance, slight as it may appear, rendered his degradation imperfect, and afterwards preserved his living to him. Intercession was made to get the whipping omitted; but James replied, "That since Mr Johnson had the spirit of martyrdom, it was fit he should suffer:" and he bore it with firmness, and even with alacrity. On the Revolution, the parliament resolved the proceedings against him to be null and illegal; and recommended him to the king, who offered him the rich deanery of Durham: but this he refused, as inadequate to his services
N^o 168.

and sufferings, which he thought to merit a bishopric. The truth was, he was passionate, self-opiniated, and turbulent; and though, through Dr Tillotson's means, he obtained a pension of 300l. a-year, with other gratifications, he remained discontented; pouring forth all his uneasiness against a standing army, and the great favours shown to the Dutch. He died in 1703, and his works were afterwards collected in one volume folio.

JOHNSON (Dr Samuel), who has been styled the brightest ornament of the 18th century, was born in the city of Litchfield in Staffordshire on the 18th of September N. S. 1709. His father Michael was a bookseller; and must have had some reputation in the city, as he more than once bore the office of chief magistrate. By what casuistical reasoning he reconciled his conscience to the oaths required to be taken by all who occupy such stations, cannot now be known; but it is certain that he was zealously attached to the exiled family, and instilled the same principles into the youthful mind of his son. So much was he in earnest in this work, and at so early a period did he commence it, that when Dr Sichaverel, in his memorable tour through England, came to Litchfield, Mr Johnson carried his son, not then quite three years old, to the cathedral, and placed him on his shoulders, that he might see as well as hear the far-famed preacher.

But political prejudices were not the only bad things which young Sam inherited from his father: he derived from the same source a morbid melancholy, which, though it neither depressed his imagination, nor clouded his perspicacity, filled him with dreadful apprehensions of insanity, and rendered him wretched through life. From his nurse he contracted the *scrophula* or king's evil, which made its appearance at a very early period, disfigured a face naturally well formed, and deprived him of the sight of one of his eyes.

When arrived at a proper age for grammatical instruction, he was placed in the free school of Litchfield, of which one Mr Hunter was then master; a man whom his illustrious pupil thought "very severe, and wrong-headedly severe," because he would beat a boy for not answering questions which he could not expect to be asked. He was, however, a skilful teacher; and Johnson, when he stood in the very front of learning, was sensible how much he owed to him; for upon being asked how he had acquired so accurate a knowledge of the Latin tongue, he replied, "My master beat me very well; without that, Sir, I should have done nothing."

At the age of 15 Johnson was removed from Litchfield to the school of Stourbridge in Worcestershire, at which he remained little more than a year, and then returned home, where he staid two years without any settled plan of life or any regular course of study. He read, however, a great deal in a desultory manner, as chance threw books in his way, and as inclination directed him through them; so that when in his 19th year he was entered a commoner of Pembroke college Oxford, his mind was stored with a variety of such knowledge as is not often acquired in universities, where boys seldom read any books but what are put into their hands by their tutors. He had given very early proofs of his poetical genius both in his school exercises and in

Johnson. In other occasional compositions: but what is perhaps more remarkable, as it shows that he must have thought much on a subject on which other boys of that age seldom think at all, he had before he was 14 entertained doubts of the truth of revelation. From the melancholy of his temper these would naturally prey upon his spirits, and give him great uneasiness: but they were happily removed by a proper course of reading (A); for "his studies being honest, ended in conviction. He found that religion is true; and what he had learned, he ever afterward endeavoured to teach."

Concerning his residence in the university, and the means by which he was there supported, his two principal biographers contradict each other; so that these are points of which we cannot write with certainty. According to Sir John Hawkins, the time of his continuance at Oxford is divisible into two periods: Mr Boswell represents it as only one period, with the usual interval of a long vacation. Sir John says, that he was supported at college by Mr Andrew Corbet in quality of assistant in the studies of his son: Mr Boswell assures us, that though he was promised pecuniary aid by Mr Corbet, that promise was not in any degree fulfilled. We should be inclined to adopt the knight's account of this transaction, were it not palpably inconsistent with itself. He says, that the two young men were entered in Pembroke on the *same day*; that Corbet continued in the college two years; and yet that Johnson was driven home in little more than *one year*, because by the *removal* of Corbet he was deprived of his pension. A story, of which one part contradicts the other, cannot wholly be true. Sir John adds, that "meeting with another source, the bounty, as it is supposed, of some one or more of the members of the cathedral of Lichfield, he returned to college, and made up the whole of his residence in the university about three years." Mr Boswell has told us nothing but that Johnson, though his father was unable to support him, continued three years in college, and was then driven from it by extreme poverty.

These gentlemen differ likewise in their accounts of Johnson's tutors. Sir John Hawkins says that he had two, Mr Jordan and Dr Adams. Mr Boswell affirms that Dr Adams *could not* be his tutor, *because* Jordan did not quit the college till 1731; the year in the au-

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turn of which Johnson himself was compelled to leave Oxford. Yet the same author represents Dr Adams as saying, "I was Johnson's *nominal* tutor, but he was above my mark:" a speech of which it is not easy to discover the meaning, if it was not Johnson's duty to attend Adams's lectures. In most colleges we believe there are two tutors in different departments of education; and therefore it is not improbable that Jordan and Adams may have been tutors to Johnson at the same time, the one in languages, the other in science. Jordan was a man of such mean abilities, that though his pupil loved him for the goodness of his heart, he would often risk the payment of a small fine rather than attend his lectures; nor was he studious to conceal the reason of his absence. Upon occasion of one such imposition, he said, "Sir, you have sconded me two-pence for non-attendance at a lecture not worth a penny." For some transgression or absence his tutor imposed upon him as a Christmas exercise the task of translating into Latin verse Pope's *Messiah*; which being shown to the author of the original, was read and returned with this encomium, "The writer of this poem will leave it a question for posterity, whether his or mine be the original." The particular course of his reading while in college and during the vacation which he passed at home, cannot be traced. That at this period he read much, we have his own evidence in what he afterwards told the king; but his mode of study was never regular, and at all times he thought more than he read. He informed Mr Boswell that what he read *solidly* at Oxford was Greek; and that the study of which he was most fond was metaphysics.

It was in the year 1731 that Johnson left the university without a degree; and as his father, who died in the month of December of that year, had suffered great misfortunes in trade, he was driven out a commoner of nature, and excluded from the regular modes of profit and prosperity. Having therefore not only a profession but the means of subsistence to seek, he accepted, in the month of March 1732, an invitation to the office of under-master of a free school at Market Bosworth in Leicestershire: but not knowing, as he said, whether it was more disagreeable for him to teach or for the boys to learn the grammar-rules, and being likewise disgusted at the treatment which he received from the patron of the school, he relinquished

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(A) Mrs Piozzi says, that at the age of 10 Johnson's mind was disturbed by scruples of infidelity, which preyed upon his spirits and made him very uneasy, and that they were afterwards removed by the study of *Grotius de veritate*, &c. This account of the early state of Johnson's mind with respect to religion, Mr Boswell affects to turn into ridicule, as if it were a thing absolutely impossible that a boy of 10 years should have any religious scruples. He says, that Johnson became *inattentive* to religion at nine; *talked*, but did not *think* much, against it at 14; and was first made to think about it in earnest by a casual perusal of *Law's serious call to the unconverted*, which he had taken up with a view to laugh at it. That it is not common for boys of 10 to have scruples of infidelity, must be granted; but that some have had them so early, the writer of this article knows by the most complete evidence: and if that be admitted of Johnson which has been true of others, Mrs Piozzi's narrative is natural, and honourable to him of whom it is written. But that a *melancholy* person should *talk* without *thinking* against religion, or that he should *think* against it with a disposition to *laughter*, and not be at the time a confirmed *atheist*, is in itself so extremely incredible, that we cannot help suspecting Mr Boswell to have on this occasion mistaken the words of his great friend. "*Law's serious call*" is a very good book; but surely it is not so well adapted to carry conviction to a reasoning mind as *Grotius de veritate*; and there is in Mr Boswell's two volumes sufficient evidence that Johnson was of our opinion.

Johnson. in a few months a situation which he ever afterwards recollected with horror. Being thus again without any fixed employment, and with very little money in his pocket, he translated Lobo's voyage to Abyssinia, for the trifling sum, it is said, of five guineas, which he received from a bookseller in Birmingham. This was the first attempt which it is certain he made to procure pecuniary assistance by means of his pen; and it must have held forth very little encouragement to his commencing author by profession.

In 1735, being then in his 26th year, he married Mrs Porter, the widow of a mercer in Birmingham; whose age was almost double his; whose external form, according to Garrick and others, had never been captivating; and whose fortune amounted to hardly 800l. That she had a superiority of understanding and talents is extremely probable, both because she certainly inspired him with a more than ordinary passion, and because she was herself so delighted with the charms of his conversation as to overlook his external disadvantages, which were many and great. He now set up a private academy; for which purpose he hired a large house well situated near his native city: but his name having then nothing of that celebrity which afterwards commanded the attention and respect of mankind, this undertaking did not succeed. The only pupils who are known to have been placed under his care, were the celebrated David Garrick, his brother George Garrick, and a young gentleman of fortune whose name was Offely. He kept his academy only a year and a half; and it was during that time that he constructed the plan and wrote a great part of his tragedy of Irene.

The respectable character of his parents and his own merit had secured him a kind reception in the best families at Lichfield; and he was particularly distinguished by Mr Walsley register of the ecclesiastical court, a man of great worth and of very extensive and various erudition. That gentleman, upon hearing part of Irene read, thought so highly of Johnson's abilities as a dramatic writer, that he advised him by all means to finish the tragedy and produce it on the stage. To men of genius the stage holds forth temptations almost irresistible. The profits arising from a tragedy, including the representation and printing of it, and the connections which it sometimes enables the author to form, were in Johnson's imagination inestimable. Flattered, it may be supposed, with these hopes, he set out some time in the year 1737 with his pupil David Garrick for London, leaving Mrs Johnson to take care of the house and the wreck of her fortune. The two adventurers carried with them from Mr Walsley an earnest recommendation to the reverend Mr Colson, then master of an academy, and afterwards Lucasian professor of mathematics in the university of Cambridge; but from that gentleman it does not appear that Johnson found either protection or encouragement.

How he spent his time upon his first going to London is not particularly known. His tragedy was refused by the managers of that day; and for some years the Gentleman's Magazine seems to have been his principal resource for employment and support. To enumerate his various communications to that far-famed miscellany, would extend this article beyond the limits which we can afford. Suffice it to say, that his connection with Cave the proprietor became very close; that he wrote

prefaces, essays, reviews of books, and poems; and that he was occasionally employed in correcting the papers written by other correspondents. When the complaints of the nation against the administration of Sir Robert Walpole became loud, and a motion was made, February 13th 1740-1, to remove him from his majesty's counsels for ever, Johnson was pitched upon by Cave to write what was in the Magazine entitled *Debates in the Senate of Lilliput*, but was understood to be the speeches of the most eminent members in both houses of parliament. These orations, which induced *Voltaire* to compare British with ancient eloquence, were hastily sketched by Johnson while he was not yet 32 years old, while he was little acquainted with life, while he was struggling not for distinction but for existence. Perhaps in none of his writings has he given a more conspicuous proof of a mind prompt and vigorous almost beyond conception: for they were composed from scanty notes taken by illiterate persons employed to attend in both houses; and sometimes he had nothing communicated to him but the names of the several speakers, and the part which they took in the debate.

His separate publications which at this time attracted the greatest notice were, "*London*, a Poem in imitation of Juvenal's third Satire;" "*Marmor Norfolciense*, or an Essay on an ancient prophetic Inscription in Monkish Rhyme, lately discovered near Lynne in Norfolk;" and "*A complete Vindication of the Licentiousness of the Stage from the malicious and scandalous aspersions of Mr Brook author of Gustavus Vasa.*" The poem, which was published 1738 by Dodsley, is universally known and admired as the most spirited instance in the English language of ancient sentiments adapted to modern topics. Pope, who then filled the poetical throne without a rival, being informed that the author's name was *Johnson*, and that he was an obscure person, replied, "he will soon be *deterred*." The other two pamphlets, which were published in 1739, are filled with keen satire on the government; and though Sir John Hawkins has thought fit to declare that they display neither learning nor wit, Pope was of a different opinion; for in a note of his preserved by Mr Boswell, he says, that "the whole of the Norfolk prophecy is very humorous."

Mrs Johnson, who went to London soon after her husband, now lived sometimes in one place and sometimes in another, sometimes in the city and sometimes at Greenwich: but Johnson himself was oftener to be found at St John's Gate, where the Gentleman's Magazine was published, than in his own lodgings. It was there that he became acquainted with *Savage*, with whom he was induced, probably by the similarity of their circumstances, to contract a very close friendship; and such was their extreme necessities, that they have often wandered whole nights in the street for want of money to procure them a lodging. In one of these nocturnal rambles, when their distress was almost incredible, so far were they from being depressed by their situation, that in high spirits and brimful of patriotism, they traversed St James's Square for several hours, inveighed against the minister; and, as Johnson said in ridicule of himself, his companion, and all such patriots, "*resolved that they would stand by their country!*" In 1744, he published the life of his

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Johnson. unfortunate companion; a work which, had he never written any thing else, would have placed him very high in the rank of authors (a). His narrative is remarkably smooth and well disposed, his observations are just, and his reflections disclose the inmost recesses of the human heart.

In 1749, when Drury-lane theatre was opened under the management of Garrick, Johnson wrote a prologue for the occasion; which for just dramatic criticism on the whole range of the English stage, as well as for poetical excellence, is confessedly unrivalled. But this year is, in his life, distinguished as the epoch when his arduous and important work, the Dictionary of the English Language, was announced to the world by the publication of its plan or prospectus, addressed to the earl of Chesterfield. From that nobleman Johnson was certainly led to expect patronage and encouragement; and it seems to be equally certain that his lordship expected, when the book should be published, to be honoured with the dedication. The expectations of both were disappointed. Lord Chesterfield, after seeing the lexicographer once or twice, suffered him to be repulsed from his door: but afterwards thinking to conciliate him when the work was upon the eve of publication, he wrote two papers in "The World," warmly recommending it to the public. This artifice was seen through; and Johnson, in very polite language, rejected his Lordship's advances, letting him know, that he was unwilling the public should consider him as owing to a patron that which Providence had enabled him to do for himself. This great and laborious work its author expected to complete in three years: but he was certainly employed

upon it seven; for we know that it was begun in 1747, and the last sheet was sent to the press in the end of the year 1754. When we consider the nature of the undertaking, it is indeed astonishing that it was finished so soon, since it was written, as he says, "with little assistance of the learned, and without any patronage of the great; not in the soft obscurities of retirement, or under the shelter of academic bowers, but amidst inconvenience and distraction, in sickness and in sorrow." The sorrow, to which he here alludes, is probably that which he felt for the loss of his wife, who died on the 17th of March O.S. 1752, and whom he continued to lament as long as he lived.

The Dictionary did not occupy his whole time: for while he was pushing it forward, he fitted his Tragedy for the stage; wrote the lives of several eminent men for the Gentleman's Magazine; published an Imitation of the 10th Satire of Juvenal, intitled "The Vanity of human Wishes;" and began and finished "The Rambler." This last work is so well known, that it is hardly necessary to say that it was a periodical paper, published twice a-week, from the 20th of March 1750 to the 14th of March 1752 inclusive: but to give our readers some notion of the vigour and promptitude of the author's mind, it may not be improper to observe, that notwithstanding the severity of his other labours, all the assistance which he received does not amount to five papers; and that many of the most masterly of those unequalled essays were written on the spur of the occasion, and never seen entire by the author till they returned to him from the press (c).

Soon after the Rambler was concluded, Dr Hawke-
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(a) From the merit of this work Mr Boswell has endeavoured to detract, by insinuating, that the person called *Richard Savage* was an impostor, and not the son of the earl of Rivers and the countess of Macclesfield. See our account of SAVAGE.

(c) The style of the Rambler has been much praised and much censured, sometimes perhaps by men who paid little attention to the author's views. It has been compared with the style of Addison; to which it is thought superior by some, and inferior by others. Its defects have been petulantly caricatured, and its merits unduly exalted. To attempt a defence of all the words in it which are derived from the Latin, would be in vain; for though many of them are elegant and expressive, others are harsh, and do not easily assimilate with the English idiom. But it would be as easy to defend the use of Johnson's words as the structure of all Addison's sentences; for though many of these are exquisitely beautiful, it must be confessed that others are feeble, and offend at once the ear and the mind. An ingenious essayist says, that in the Rambler "the constant recurrence of sentences in the form of what have been called triplets, is disgusting to all readers." The recurrence is indeed very frequent; but it certainly is not constant, nor we hope always disgusting: and as what he calls the triplet is unquestionably the most energetic form of which an English sentence is susceptible, we cannot help thinking, that it *should* frequently recur in detached essays, of which the object is to inculcate moral truths. He who reads *half a volume* of the Rambler at a sitting, will feel his ear fatigued by the close of similar periods so frequently recurring; but he who reads only one paper in the day, will experience nothing of this weariness. For purposes merely didactic, when something is to be told that was not known before, Addison's style is certainly preferable to Johnson's, and Swift's is preferable to both: but the question is, Which of them makes the best provision against that inattention by which known truths are suffered to lie neglected? There are very few moral truths in the Spectator or in the Rambler of which the reader can be totally ignorant; but there are many which may have little influence on his conduct, because they are seldom the objects of his thought. If this be so, that style should be considered as best which most rouses the attention, and impresses deepest in the mind the sentiments of the author: and therefore, to decide between the style of Addison and that of Johnson, the reader should compare the effects of each upon his own memory and imagination, and give the preference to that which leaves the most lasting impression. But it is said that Johnson himself must have recognized the fault of perpetual triplets in his style, since they are by no means frequent in his last productions. Is this a fair state of the case? His last production was "the Lives of the British Poets," of which a great part consists of the narration of facts; and such a narration in the style of the Rambler would be ridiculous.

Johnson. worth projected "The Adventurer" upon a similar plan; and by the assistance of friends he was enabled to carry it on with almost equal merit. For a short time, indeed, it was the most popular work of the two; and the papers with the signature T, which are confessedly the most splendid in the whole collection, are now known to have been communicated by Johnson, who received for each the sum of two guineas. This was double the price for which he sold sermons to such clergymen as either would not or could not compose their own discourses; and of sermon-writing he seems to have made a kind of trade.

Though he had exhausted, during the time that he was employed on the Dictionary, more than the sum for which the booksellers had bargained for the copy; yet by means of the Rambler, Adventurer, sermons, and other productions of his pen, he now found himself in greater affluence than he had ever been before; and as the powers of his mind, distended by long and severe exercise, required relaxation to restore them to their proper tone, he appears to have done little or nothing from the closing of the Adventurer till the year 1756, when he submitted to the office of reviewer in the Literary Magazine. Of his reviews by far the most valuable is that of Soame Jennyns's "Free Inquiry into the Nature and Origin of Evil." Never were wit and metaphysical acuteness more closely united than in that criticism, which exposes the weakness and holds up to contempt the reasonings of those vain mortals, who presumptuously attempt to grasp the scale of existence, and to form plans of conduct for the Creator of the universe. But the furnishing of magazines, reviews, and even newspapers with literary intelligence, and authors of books with dedications and prefaces, was considered as an employment unworthy of Johnson. It was therefore proposed by the booksellers that he should give a new edition of the dramas of Shakespeare; a work which he had projected many years before, and of which he had published a specimen which was commended by Warburton. When one of his friends expressed a hope that this employment would furnish him with amusement and add to his fame, he replied, "I look upon it as I did upon the Dictionary; it is all work; and my inducement to it is not love or desire of fame, but the want of money, which is the only motive to writing that I know of." He issued proposals, however, of considerable length; in which he showed that he knew perfectly what a variety of research such an undertaking required: but his indolence prevented him from pursuing it with diligence, and it was not published till many years afterwards.

On the 15th of April 1758 he began a new periodical paper intitled "The Idler," which came out every Saturday in a weekly newspaper, called "the Universal Chronicle, or Weekly Gazette," published by Newberry. Of these essays, which were continued till the 5th of April 1760, many were written as hastily as an

ordinary letter; and one in particular composed at Johnson, Oxford was begun only half an hour before the departure of the post which carried it to London. About this time he had the offer of a living, of which he might have rendered himself capable by entering into orders. It was a rectory in a pleasant country, of such yearly value as would have been an object to one in much better circumstances; but sensible, as it is supposed, of the asperity of his temper, he declined it, saying, "I have not the requisites for the office, and I cannot in my conscience shear the flock which I am unable to feed."

In the month of January 1759 his mother died at the great age of 90; an event which deeply affected him, and gave birth to the 41st Idler, in which he laments, that "the life which made his own life pleasant was at an end, and that the gate of death was shut upon his prospects." Soon afterwards he wrote his "Rasselas Prince of Abyssinia;" that with the profits he might defray the expence of his mother's funeral, and pay some debts which she had left. He told a friend, that he received for the copy 100l. and 25l. more when it came to a second edition; that he wrote it in the evenings of one week, sent it to the press in portions as it was written, and had never since read it over.

Hitherto, notwithstanding his various publications, he was poor, and obliged to provide by his labour for the wants of the day that was passing over him; but having been early in 1762 represented to the king as a very learned and good man without any certain provision, his majesty was pleased to grant him a pension, which Lord Bute, then first minister, assured him "was not given for any thing which he *was to do*, but for what he *had already done*." A fixed annuity of three hundred pounds a-year, if it diminished his distress, increased his indolence; for as he constantly avowed that he had no other motive for writing than to gain money, as he had now what was abundantly sufficient for all his purposes, as he delighted in conversation, and was visited and admired by the witty, the elegant, and the learned, very little of his time was past in solitary study. Solitude was indeed his aversion; and that he might avoid it as much as possible, Sir Joshua Reynolds and he, in 1764, instituted a club, which existed long without a name, but was afterwards known by the title of the *Literary Club*. It consisted of some of the most enlightened men of the age, who met at the Turk's Head in Gerard-street Soho one evening in every week at seven, and till a late hour enjoyed "the feast of reason and the flow of soul."

In 1765, when Johnson was more than usually oppressed with constitutional melancholy, he was fortunately introduced into the family of Mr Thrale, one of the most eminent brewers in England, and member of parliament for the borough of Southwark: and it is but justice to acknowledge, that to the assistance which

culous. Cicero's orations are universally admired; but if Cæsar's commentaries had been written in that style, who would have read them? When Johnson in his biography has any important truth to enforce, he generally employs the rounded and vigorous periods of the Rambler; but in the bare narration he uses a simpler style, and that as well in the life of Savage, which was written at an early period, as in the lives of those which were written later. It is not, however, very prudent in an ordinary writer to attempt a close imitation of the style of the Rambler; for Johnson's vigorous periods are fitted only to the weight of Johnson's thoughts.

Johnson. which Mr and Mrs Thrale gave him, to the shelter which their house afforded him for 16 or 17 years, and to the pains which they took to soothe or repress his uneasy fancies, the public is probably indebted for some of the most masterly as well as most popular works which he ever produced. At length, in the October of this year, he gave to the world his edition of Shakespeare, which is chiefly valuable for the preface, where the excellencies and defects of that immortal bard are displayed with such judgment, as must please every man whose taste is not regulated by the standard of fashion or national prejudice. In 1767 he was honoured by a private conversation with the king in the library at the queen's house: and two years afterwards, upon the establishment of the royal academy of painting, sculpture, &c. he was nominated professor of ancient literature; an office merely honorary, and conferred on him, as is supposed, at the recommendation of his friend the president.

In the variety of subjects on which he had hitherto exercised his pen, he had forborne, since the administration of Sir Robert Walpole, to meddle with the disputes of contending factions; but having seen with indignation the methods which, in the business of Mr Wilkes, were taken to work upon the populace, he published in 1770 a pamphlet, intitled "The False Alarm;" in which he asserts, and labours to prove by a variety of arguments founded on precedents, that the expulsion of a member of the house of commons is equivalent to exclusion, and that no such calamity as the subversion of the constitution was to be feared from an act warranted by usage, which is the law of parliament. Whatever may be thought of the principles maintained in this publication, it unquestionably contains much wit and much argument, expressed in the author's best style of composition; and yet it is known to have been written between eight o'clock on Wednesday night and twelve o'clock on the Thursday night, when it was read to Mr Thrale upon his coming from the house of commons. In 1771 he published another political pamphlet, intitled, "Thoughts on the late transactions respecting Falkland's Islands;" in which he attacked *Jurinus*: and he ever afterwards delighted himself with the thought of having destroyed that able writer, whom he certainly surpassed in nervous language and pointed ridicule.

In 1773 he visited with Mr Boswell some of the most considerable of the Hebrides or Western Islands of Scotland, and published an account of his journey in a volume which abounds in extensive philosophical views of society, ingenious sentiments, and lively description, but which offended many persons by the violent attack which it made on the authenticity of the poems attributed to Ossian. For the degree of offence that was taken, the book can hardly be thought to contain a sufficient reason: if the antiquity of these poems be yet doubted, it is owing more to the conduct of their editor than to the violence of Johnson. In 1774, the parliament being dissolved, he addressed to the electors of Great Britain a pamphlet, intitled "The Patriot;" of which the design was to guard them from imposition, and teach them to distinguish true from false patriotism. In 1775 he published "Taxation no tyranny; in answer to the resolutions and address of the American Congress." In this

performance his admirer Mr Boswell cannot, he says, *Johnson.* perceive that ability of argument or that felicity of expression for which on other occasions Johnson was so eminent. This is a singular criticism. To the assumed principle upon which the reasoning of the pamphlet rests many have objected, and perhaps their objections are well founded; but if it be admitted that "the Supreme Power of every community has the right of requiring from all its subjects such contributions as are necessary to the public safety, or public prosperity," it will be found a very difficult task to break the chain of arguments by which it is proved that the British parliament had a right to tax the Americans. As to the *expression* of the pamphlet, the reader, who adopts the maxim recorded in the "Journal of a tour to the Hebrides," that a controvertist "ought not to strike soft in battle," must acknowledge that it is uncommonly happy, and that the whole performance is one of the most brilliant as well as most correct pieces of composition that ever fell from the pen of its author. These essays drew upon him numerous attacks, all of which he heartily despised; for though it has been supposed that "A letter addressed to Dr Samuel Johnson occasioned by his political publications," gave him great uneasiness, the contrary is manifest, from his having, after the appearance of that letter, collected them into a volume with the title of "Political Tracts by the author of the Rambler." In 1765 Trinity College Dublin had created him L.L.D. by *diploma*, and he now received the same honour from the University of Oxford; an honour with which, though he did not boast of it, he was highly gratified. In 1777 he was induced, by a case of a very extraordinary nature, to exercise that humanity which in him was obedient to every call. Dr William Dodd, a clergyman, under sentence of death for the crime of forgery, found means to interest Johnson in his behalf, and procured from him two of the most energetic compositions of the kind ever seen; the one a petition from himself to the king, the other a like address from his wife to the queen. These petitions failed of success.

The principal booksellers in London having determined to publish a body of English poetry, Johnson was prevailed upon to write the lives of the poets, and give a character of the works of each. This task he undertook with alacrity, and executed it in such a manner as must convince every competent reader, that as a biographer and a critic, no nation can produce his equal. The work was published in ten small volumes, of which the first four came abroad 1778, and the others in 1781. While the world in general was filled with admiration of the stupendous powers of that man, who at the age of seventy-two, and labouring under a complication of diseases, could produce a work which displays so much genius and so much learning; there were narrow circles in which prejudice and resentment were fostered, and whence attacks of different sorts issued against him. These gave him not the smallest disturbance. When told of the feeble, though shrill, outcry that had been raised, he said—"Sir, I considered myself as entrusted with a certain portion of truth. I have given my opinion sincerely; let them show where they think me wrong."

He had hardly begun to reap the laurels gained by this

Johnson. this performance, when death deprived him of Mr Thrale, in whose house he had enjoyed the most comfortable hours of his life; but it abated not in Johnson that care for the interests of those whom his friend had left behind him, which he thought himself bound to cherish, both in duty as one of the executors of his will, and from the nobler principle of gratitude. On this account, his visits to Streatham, Mr Thrale's villa, were for some time after his death regularly made on Monday and protracted till Saturday, as they had been during his life; but they soon became less and less frequent, and he studiously avoided the mention of the place or the family. Mrs Thrale, now Piozzi, says indeed, that "it grew extremely perplexing and difficult to live in the house with him when the master of it was no more; because his dislikes grew capricious, and he could scarce bear to have any body come to the house whom it was absolutely necessary for her to see." The person whom she thought it most necessary for her to see may perhaps be guessed at without any superior share of sagacity; and if these were the visits which Johnson could not bear, we are so far from thinking his dislikes capricious, though they may have been perplexing, that if he had acted otherwise, we should have blamed him for want of gratitude to the friend whose "face for fifteen years had never been turned upon him but with respect or benignity."

About the middle of June 1783 his constitution sustained a severer shock than it had ever before felt, by a stroke of the palsy; so sudden and so violent, that it awakened him out of a sound sleep, and rendered him for a short time speechless. As usual, his recourse under this affliction was to piety, which in him was constant, sincere, and fervent. He tried to repeat the Lord's prayer first in English, then in Latin, and afterwards in Greek; but succeeded only in the last attempt; immediately after which he was again deprived of the power of articulation. From this alarming attack he recovered with wonderful quickness, but it left behind it some presages of an hydropic affection; and he was soon afterwards seized with a spasmodic asthma of such violence that he was confined to the house in great pain, while his dropsy increased notwithstanding all the efforts of the most eminent physicians in London and Edinburgh. He had, however, such an interval of ease as enabled him in the summer 1784 to visit his friends at Oxford, Lichfield, and Ashbourne in Derbyshire. The Romish religion being introduced one day as the topic of conversation when he was in the house of Dr Adams, Johnson said, "If you join the papists externally, they will not interrogate you strictly as to your belief in their tenets. No reasoning papist believes every article of their faith. There is one side on which a good man might be persuaded to embrace it. A good man of a timorous disposition, in great doubt of his acceptance with God, and pretty credulous, might be glad of a church where there are so many helps to go to heaven. I would be a papist if I could. I have fear enough; but an obstinate rationality prevents me. I shall never be a papist unless on the near approach of death, of which I have very great terror."

His constant dread of death was indeed so great, that it astonished all who had access to know the piety of his mind and the virtues of his life. Attempts have been

made to account for it in various ways; but doubtless Johnson that is the true account which is given in the *Olla Podrida*, by an elegant and pious writer, who now adorns a high station in the church of England. "That he should not be conscious of the abilities with which Providence had blessed him, was impossible. He felt his own powers; he felt what he was capable of having performed; and he saw how little, comparatively speaking, he had performed. Hence his apprehension on the near prospect of the account to be made, viewed through the medium of constitutional and morbid melancholy, which often excluded from his sight the bright beams of divine mercy." This, however, was the case only while death was approaching from some distance. From the time that he was certain it was near, all his fears were calmed; and he died on the 13th of December 1784, full of resignation, strengthened by faith, and joyful in hope.

For a just character of this great man our limits afford not room: we must therefore content ourselves with laying before our readers a very short sketch. His stature was tall, his limbs were large, his strength was more than common, and his activity in early life had been greater than such a form gave reason to expect: but he was subject to an infirmity of the convulsive kind, resembling the distemper called St Vitus's dance; and he had the seeds of so many diseases sown in his constitution, that a short time before his death he declared that he hardly remembered to have passed one day wholly free from pain. He possessed very extraordinary powers of understanding; which were much cultivated by reading, and still more by meditation and reflection. His memory was remarkably retentive, his imagination uncommonly vigorous, and his judgment keen and penetrating. He read with great rapidity, retained with wonderful exactness what he so easily collected, and possessed the power of reducing to order and system the scattered hints on any subject which he had gathered from different books. It would not perhaps be safe to claim for him the highest place, among his contemporaries, in any single department of literature; but, to use one of his own expressions, he brought more *mind* to every subject, and had a greater variety of knowledge *ready* for all occasions, than any other man that could be easily named. Though prone to superstition, he was in all other respects so remarkably incredulous, that Hogarth said, while Johnson firmly believed the bible, he seemed determined to believe nothing but the bible. Of the importance of religion he had a strong sense, and his zeal for its interests were always awake, so that profaneness of every kind was abashed in his presence. The same energy which was displayed in his literary productions, was exhibited also in his conversation, which was various, striking, and instructive: like the sage in *Rasselas*, he spoke, and attention watched his lips; he reasoned, and conviction closed his periods: when he pleased, he could be the greatest sophist that ever contended in the lists of declamation; and perhaps no man ever equalled him in nervous and pointed repartees. His vivacity from the most trivial to the most solemn occasions, was strict even to severity: he scorned to embellish a story with fictitious circumstances; for what is not a representation of reality, he used to say, is not worthy of our attention. As his purse

Johnston. purse and his house were ever open to the indigent, so was his heart tender to those who wanted relief, and his soul was susceptible of gratitude and every kind impression. He had a roughness in his manner which subdued the saucy and terrified the meek: but it was only in his manner; for no man was more loved than Johnston was by those who knew him; and his works will be read with veneration for their author as long as the language in which they are written shall be understood.

JOHNSTON, or JOHNSON (John), a learned divine, born in 1662. He was zealous for the Revolution, and preached a noted sermon at Feverham on the occasion, from the words, "Remember Lot's wife;" wherein he set forth the great danger of looking back, and vindicated the liturgy against Mr Baxter and others. He published *The Clergyman's Vade Mecum*, and *A Collection of Ecclesiastical Laws* as a continuation of it; but catching the infection spread by Dr Sachaverel, he, on the accession of Geo. I. to the amazement of all his old friends, entertained unfavourable thoughts of the Protestant succession, and refused to read the usual prayers for the king. Being prosecuted, however, he thought proper to submit; and died vicar of Cranbrook in Kent, in 1725.

JOHNSTON (Dr Arthur), was born at Caskieben, near Aberdeen, the seat of his ancestors, and probably was educated at Aberdeen, as he was afterwards advanced to the highest dignity in that university. The study he chiefly applied himself to was that of physic; and to improve himself in that science, he travelled into foreign parts. He was twice at Rome; but the chief place of his residence was Padua, in which university the degree of M. D. was conferred on him in 1610, as appears by a MS. copy of verses in the advocate's library in Edinburgh. After leaving Padua, he travelled through the rest of Italy, and over Germany, Denmark, England, Holland, and other countries; and at length settled in France; where he met with great applause as a Latin poet. He lived there 20 years, and by two wives had 13 children. After 24 years absence, he returned into Scotland in 1632. It appears by the Council Books at Edinburgh, that the Doctor had a suit at law before that court about that time. In the year following, it is very well known that Charles I. went into Scotland, and made bishop Laud, then with him, a member of that council: and by this accident, it is probable, that acquaintance began between the doctor and that prelate, which produced his "*Psalmorum Davidis Paraphrasum Poëtica*;" for we find that, in the same year, the doctor printed a specimen of his Psalms at London, and dedicated them to his lordship.

He proceeded to perfect the whole, which took him up four years; and the first edition complete was published at Aberdeen in 1637, and at London the same year. In 1641, Dr Johnston being at Oxford, on a visit to one of his daughters who was married to a divine of the church of England in that place, was seized with a violent diarrhoea, of which he died in a few days, in the 54th year of his age, not without having seen the beginning of those troubles that proved so fatal to his patron. He was buried in the place where he died; which gave occasion to the fol-

lowing lines of his learned friend Wedderburn in his *Suspensio* on the Doctor's death:

Scotia mœsta, dole, tanti viduata sepulchro
Vatis; is Angligenis contigit altus honos

In what year Dr. Johnston was made physician to the kind does not appear; it is most likely that the archbishop procured him that honour at his coming into England in 1633, at which time he translated Solomon's Song into Latin elegiac verse, and dedicated it to his majesty. His Psalms were reprinted at Middleburgh, 1642; London, 1657; Cambridge, . . . ; Amsterdam, 1706; Edinburgh, by William Lauder, 1739; and last on the plan of the Delphin classics, at London, 1741, 8vo, at the expence of auditor Benson, who dedicated them to his late majesty, and prefixed to this edition memoirs of Dr Johnston, with the testimonies of various learned persons. A laboured comparison between the two translations of Buchanan and Johnston was printed the same year in English, in 8vo, intitled, "A Prefatory Discourse to Dr Johnston's Psalms, &c." and "A Conclusion to it." His translations of the Te Deum, Creed, Decalogue, &c. were subjoined to the Psalms. His other poetical works are his Epigrams; his *Parerga*, and his *Musa Anglica*, or commendatory Verses upon persons of rank in church and state at that time.

JOIGNY, a town of France, in Champagne, and in the diocese of Sens, with a very handsome castle. It consists of three parishes, and is pleasantly situated on the river Yonne, in E. Long. 3. 25. N. Lat. 47. 56.

JOINERY, the art of working in wood, or of fitting various pieces of timber together. It is called by the French *menuiserie*, "small work," to distinguish it from carpentry, which is employed about large and less curious works.

JOINT, in general, denotes the juncture of two or more things. The joints of the human body are called by anatomists *articulations*. See ANATOMY, n° 2.

The suppleness to which the joints may be brought by long practice from the time of infancy, is very surprising. Every common posture-master shows us a great deal of this; but one of the most wonderful instances we ever had of it, was in a person of the name of *Clark*, and famous for it in London, where he was commonly known by the name of *Clerk the posture-master*. This man had found the way, by long practice, to distort many of the bones, of which nobody before had ever thought it possible to alter the position. He had such an absolute command of his muscles and joints, that he could almost disjoint his whole body; so that he once imposed on the famous Mullens by his distortions, in such a manner, that he refused to undertake his cure: but, to the amazement of the physician, no sooner had he given over his patient, than he saw him restore himself to the figure and condition of a proper man, with no distortion about him.

JOINTURE, in law, generally signifies a settlement of lands and tenements, made on a woman in consideration of marriage.

JOINVILLE (John Sire de), an eminent French statesman of the 13th century, who was seneschal or high-

Joigny.

Joinville.

Joinville high-steward of Champagne, and one of the principal lords in the court of Louis IX. He attended that monarch in all his expeditions; and had so much confidence placed in him, that all matters of justice in the palace were referred to his decision, and the king undertook nothing of consequence without consulting him. He wrote the history of St Lewis in French, which is a very curious and interesting piece; and died about the year 1318. The best edition of this work is that of Du Cange, in folio, with learned remarks.

JOINVILLE, an ancient and considerable town of France, in Champagne, with the title of a principality, and a large magnificent castle. It is situated on the river Marne, in E. Long. 5. 10. N. Lat. 48. 20.

JOISTS, or **JOYSTS**, in architecture, those pieces of timber framed into the girders and summers, on which the boards of the floor are laid.

JOKES. See **JESTING**.

IOLATA, a festival at Thebes, the same as that called *Heracleia*. It was instituted in honour of Hercules and his friend Iolas, who assisted him in conquering the hydra. It continued during several days, on the first of which were offered solemn sacrifices. The next day horse-races and athletic exercises were exhibited. The following day was set apart for wrestling, the victors were crowned with garlands of myrtle generally used at funeral solemnities. They were sometimes rewarded with tripods of brass. The place where the exercises were exhibited was called *Iolaion*; where there were to be seen the monument of Amphitryon and the cenotaph of Iolas, who was buried in Sardinia. These monuments were strewed with garlands and flowers on the day of the festival.

IOLAS or **IOLAUS**, (fab. hist.) a son of Iphiclus king of Thessaly, who assisted Hercules in conquering the Hydra, and burnt with a hot iron the place where the heads had been cut off, to prevent the growth of others. He was restored to his youth and vigour by Hebe, at the request of his friend Hercules. Some time afterwards Iolas assisted the *HERACLIDÆ* against Eurystheus, and killed the tyrant with his own hand. According to Plutarch, Iolas had a monument in Boeotia and Phocis, where lovers used to go and bind themselves by the most solemn oaths of fidelity, considering the place as sacred to love and friendship. According to Diodorus and Pausanias, Iolas died and was buried in Sardinia, where he had gone to make a settlement at the head of the sons of Hercules by the 50 daughters of Theopius.

JOLLY, or **JOLY**, (Claudius), a worthy parish-priest, and an excellent scholar, descended from a family eminent for learning and piety; was born at Paris in 1607. He applied himself first to the law, and pleaded for some time at the bar: but inclining afterwards to the church, he entered into orders, and in 1631 obtained a canonry in the cathedral church of Notre Dame at Paris; the duties of which office he discharged with an exactness beyond all example as long as he lived. Discovering at the same time occasionally a capacity for state-affairs, the duke de Longueville, the French plenipotentiary for negotiating a general peace, took Joly with him to Munster, where he proved a good assistant. On his return, he resumed his former employments with his usual zeal. In 1671 he was
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made precentor in his church; and several times official of Paris, without his seeking; always behaving, as an ecclesiastical magistrate, with perfect integrity, and testifying a sincere love for justice. He died in 1700, and left many works; in which, as in as many mirrors, his true character fully appears.

JOLI (Guy), king's counsellor to the Chatelet, and syndic of the revenues of the Hotel de Ville at Paris, attached himself for a long time to cardinal de Retz in the capacity of secretary. Beside other tracts, he wrote *Memoirs* from 1648 to 1665, including those of Cardinal de Retz; a translation of which into English was published in 1755.

JOLLOXOCHITL, or **FLOWER OF THE HEART**, in botany; a large beautiful flower growing in Mexico; where it is not less esteemed for its beauty than for its odour, which is so powerful, that a single flower is sufficient to fill a whole house with the most pleasing fragrance. It has many petals, which are glutinous, externally white, internally reddish or yellowish, and disposed in such a manner, that when the flower is open and its petals are expanded, it has the appearance of a star, but when shut it resembles in some measure a heart, from whence its name arose. The tree which bears it is tolerably large, and its leaves are long and rough.

ION, (fab. hist.), a son of Xuthus and Creusa daughter of Erechtheus, who married Helice, the daughter of Selinus king of Ægiale. He succeeded to the throne of his father-in-law; and built a city, which he called *Helice* on account of his wife. His subjects from him received the name of *Ionians*, and the country that of *Ionia*. See **IONIA**.

ION, a tragic poet of Chios, who flourished about the 82d Olympiad. His tragedies were represented at Athens, where they met with universal applause. He is mentioned and greatly recommended by Aristophanes and Athenæus, &c.

IONA. **JONA**, or **ICOLMKILL**, one of the Hebrides; a small, but celebrated island, "once the *luminary* of the Caledonian regions (as Dr Johnson expresses it), whence savage clans and roving barbarians derived the benefits of knowledge and the blessings of religion." The name *Iona* is derived from a Hebrew word signifying a *dove*, in allusion to its patron Columba, who landed here in 565. See **COLUMBA**.—It is said to have been a seat of the druids before his arrival, when its name in Irish was *Inis Drunib*, or the "Druid Island." The druids being expelled or converted, he founded here a cell of canons regular, who till 716 differed from the church of Rome in the observance of Easter and in the tonsure. After his death, the island retained his name, and was called *Icolumb cill* or "Columb's cell," now *Icolmkill*. The Danes dislodged the monks in the 9th century, and Cluniacs were the next order that settled here.

This island, which belongs to the parish of Rosa in Mull, is three miles long, and one broad: the east side is mostly flat; the middle rises into small hills; and the west side is very rude and rocky: the whole forming a singular mixture of rock and fertility. There is in the island only one town, or rather village, consisting of about 60 mean houses. Near the town is the bay of Martyrs slain by the Danes. An oblong enclosure, bounded by a stone dyke and called *Clachnas Druinach*,

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Iona.

Druinach, in which bones have been found, is supposed to have been a burial-place of the Druids, or rather the common cemetery of the towns-people. Beyond the town are the ruins of the nunnery of Austin cano- nesses, dedicated to St Oran, and said to be founded by Columba: the church was 58 feet by 20, and the east roof is entire. On the floor, covered deep with cow-dung, is the tomb of the last prioress with her figure praying to the Virgin Mary, and this inscription on the ledge: *Hic jacet domina Anna Donaldi Ter- leti filia, quondam priorissa de Jona, qua obiit an^o m^o d^o xi^{mo} ejus animam Altissimo commendamus*: and another inscribed, *Hic jacet Mariota filia Joban: Lauchlain do- mini de. . . .* A broad paved way leads hence to the cathedral; and on this way is a large handsome cross called *Maclean's*, the only one that remains of 360, which were demolished here at the Reformation. Reilig Ouran, or the burying-place of Oran, is the large inclosure where the kings of Scotland, Ireland, and of the isles, and their descendants, were buried in three several chapels. The dean of the isles, who travelled over them 1549, and whose account has been copied by Buchanan, and published at Edinburgh 1784, says, that in his time on one of these chapels (or "tombs of stain formit like little chapels with ane braid gray marble or quhin stain on the gavel of ilk ane of the tombs," containing, as the chronicle says, the remains of 48 Scotch monarchs, from Fergus II. to Macbeth, 16 of whom were pretended to be of the race of Alpin), was inscribed, *Tumulus regum Scotie*. The next was inscribed, *Tumulus regum Hibernie*, and contained four Irish monarchs: and the 3d inscribed, *Tumulus regum Norwegie*, contained eight Norwegian princes or viceroys of the Hebrides, while they were subject to the crown of Norway. Boetius says, that Fergus founded this abbey for the burial-place of his successors, and caused an office to be composed for the funeral ceremony. All that Mr Pennant could discover here were only certain slight remains, built in a ridged form and arched within, but the inscriptions lost. These were called *Jornaire nan righ* or "the ridge of the kings." Among these stones are to be seen only these two inscriptions in the Gaelic or Erse language and ancient Irish characters: *Cros Domhail sa' a' fheib*, i. e. "the cross of Donald Long-shanks" and that of *Urchrone o Guin*; and another in- scribed *Hic jacent quatuor priores de Hy, Johannes, Hu- genius, Patricius, in decretis olim bacularius, qui obiit an. Dom. miller^{mo} quingentesimo*. Above 300 inscrip- tions were collected here by Mr Sacheverel in 1688, and given to the earl of Argyle, but afterwards lost in the troubles of the family. The place is in a man- ner filled with grave-stones, but so over-grown with weeds, that few or none are at present to be seen, far less any inscriptions read. Here also stands the chapel of St Oran, the first building begun by Columba, which the evil spirits would not suffer to stand till some hu- man victim was buried alive; for which service Oran offered himself, and his red grave-stone is near the door. In this chapel are tombs of several chiefs, &c. A little north-west of the door is the pedestal of a cross: on it are certain stones that seem to have been the supports of a tomb. Numbers who visit this island think it incumbent on them to turn each of these thrice round, according to the course of the sun.

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Iona.

They are called *Clacha-brath*; for it is thought that the *brath*, or end of the world, will not arrive till the pe- destal on which they stand is worn through. Origini- ally (says Mr Sacheverel) here were three noble globes of white marble, placed on three stone basons, and these were turned round; but the synod ordered them and 60 crosses to be thrown into the sea. The present stones are probably substituted in place of these globes. The precinct of these tombs was held sacred, and en- joyed the privileges of a girth or sanctuary. These places of retreat were by the ancient Scotch law, not to shelter indiscriminately every offender, as was the case in more bigotted times in Catholic countries; for here all atrocious criminals were excluded; and only the unfortunate delinquent, or the penitent sinner, was shielded from the instant stroke of rigorous ju- stice. A little to the north of this inclosure stands the cathedral, built in form of a cross, 115 feet long by 23, the transept 70 feet: the pillars of the choir have their capitals charged with scripture and other histories; and near the altar are the tombs of two abbots and a knight. A fragment remains of the altar-stone of white marble veined with grey. This church is ascribed to Maldwin in the 7th century; but the present structure is far too magnificent for that age. Most of the walls are built of red granite from the Nun's island in the Sound. Two parallel walls of a covered way about 12 feet high and 10 wide, reach from the south-east corner to the sea. In the church- yard is a fine cross of a single piece of red granite, 14 feet high, 22 broad, and 10 inches thick. Near the south- east end is Mary's chapel. The monastery is behind the chapel; of which only a piece of the cloisters re- mains, and some sacred black stones in a corner, on which contracts and alliances were made, and oaths sworn. East of it was the abbot's gardens and of- fices. North of this was the palace of the bishop of the isles after the separation of Man from them. This see was endowed with 13 islands; several of which were frequently taken away by the chieftains. The title of *Soder*, which some explained *Soter*, *Sölur* "the name of Christ, or Soder, an imaginary town," is really de- rived from the distinction of the diocese into the north- ern islands or *Norderceys* (i. e. all to the north of Ad- namurchan point), and the Southern or *Sudereys*; which last being the most important, the isle of Man retained both titles.

Other ruins of monastic buildings and offices may be traced, as well as some druidical sepulchral remains. Several abbeys were derived from this, which with the island was governed by an abbot-presbyter, who had rule even over bishops. The place where Columba landed is a pebbly beach, where a heap of earth represents the form of his ship. Near it is a hill with a circle of stones called *Cnoc-nar-aimgeal*, or "the hill of angels," with whom the saint held conference; and on Michael- mas day the inhabitants coursed their horses round it, a remain of the custom of bringing them there to be blessed. In former times, this island was the place where the archives of Scotland and many valuable old manuscripts were kept. Of these most are supposed to have been destroyed at the Reformation; but many, it is said, were carried to the Scotch college at Douay in France, and it is hoped some of them may still be recovered. This once illustrious seat of learning and piety

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Jonah
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Jones.

piety has now no school for education, no temple for worship, no instructor in religion, unless visited by the parish minister from another island.

JONAH, or *Prophecy of JONAH*, a canonical book of the Old Testament; in which it is related, that Jonah (about 771 B. C.) was ordered to go and prophecy the destruction of the Ninevites, on account of their wickedness. But the prophet, instead of obeying the divine command, embarked for Tarshish; when, a tempest arising, the mariners threw him into the sea: he was swallowed by a great fish; and after being three days and nights in his belly, was cast upon the land. Hereupon being sensible of his past danger and surprising deliverance, he betook himself to the journey and embassy to which he was appointed; and arriving at Nineveh the metropolis of Assyria, he, according to his commission, boldly laid open their sins and mis-carriages, and proclaimed their sudden overthrow: upon which the whole city, by prayer and fasting, and a speedy repentance, happily averted the divine vengeance, and escaped the threatened ruin. Jonah upon this, fearing to pass for a false prophet, retired to a hill at some distance from the city; where God, by a miracle, condescended to show him the unreasonableness of his discontent.

JONAS (Justus), a Protestant divine, born at North Hausen, in Thuringia, in 1493. He was one of Luther's most zealous disciples. He contracted a strict friendship with Melancthon; became principal of the college of Wittemberg, and afterwards dean of the university of that city. He wrote a treatise in favour of the marriage of priests, and other works; and died in 1555.

JONAS (Arnagrimus), a learned Iclander, acquired great reputation by his skill in the sciences, and particularly in astronomy. He was coadjutor to Gundebrian de Thorlac, bishop of Holar, in Iceland. He refused that bishopric, after the death of Gundebrian; and died in 1649. He wrote several works; the principal of which are, *Idea vera Magistratus*, and his history and description of Iceland.

JONATHAN, the son of Saul, celebrated in sacred history for his valour, and his friendship for David against the interest of his own house. Slain in battle 1055 B. C.

JONATHAN Maccabeus, brother of Judas, a renowned general of the Jews. He forced Bacchides the Syrian general, who made war with the Jews, to accept a peace; conquered Demetrius Soter, and afterwards Apollonius, that prince's general; but, being ensnared by Tryphon, was put to death 144 B. C.

JONES (Inigo), a celebrated English architect, was the son of a cloth-worker of London, and was born in 1572. He was at first put apprentice to a joiner; but early distinguished himself by his inclination to drawing or designing, and was particularly taken notice of for his skill in landscape-painting. This afterwards recommended him to the favour of William earl of Pembroke, who sent him abroad with a handsome allowance in order to perfect himself in that branch. He was no sooner at Rome, than he found himself in his proper sphere: he felt that nature had not formed him to decorate cabinets, but to design palaces. He dropt the pencil and conceived Whitehall. In the state of Venice, he saw the works of Palladio,

and learned how beautiful taste may be exerted on a less theatre than the capital of an empire. How his abilities distinguished themselves in a spot where they certainly had no opportunity to act, we are not told, though it would not be the least curious part of his history; certain it is, that, on the strength of his reputation at Venice, Christian IV. invited him to Denmark, and appointed him his architect; but on what buildings he was employed in that country, we are yet to learn. James I. found him at Copenhagen, and queen Ann took him in the quality of her architect to Scotland. He served prince Henry in the same capacity, and the place of surveyor-general of the works was granted to him in reversion. On the death of that prince, with whom at least all his lamented qualities did not die, Jones travelled once more into Italy, and, assisted by ripeness of judgment, perfected his taste. To the interval between these voyages Mr Walpole is inclined to assign those buildings of Inigo, which are less pure, and border too much upon the bastard style, which one may call *king James's gothic*. Inigo's designs of that period are not gothic, but have a littleness of parts, and a weight of ornaments, with which the revival of the Grecian taste was encumbered, and which he shook off in his grander designs. The surveyor's place fell, and he returned to England; and, as if architecture was not all he had learned at Rome, with an air of Roman disinterestedness he gave up the profits of his office, which he found extremely in debt; and prevailed upon the comptroller and paymaster to imitate his example, till the whole arrears were cleared.

In 1620, he was employed in a manner very unworthy of his genius: king James set him upon discovering, that is, guessing, who were the founders of Stonehenge. His ideas were all Romanized; consequently, his partiality to his favourite people, which ought rather to have prevented him from charging them with that mass of barbarous clumsiness, made him conclude it a Roman temple.

In the same year Jones was appointed one of the commissioners for the repair of St Paul's; but which was not commenced till the year 1633, when Laud, then bishop of London, laid the first stone, and Inigo the fourth. In the restoration of that cathedral, he made two capital faults. He first renewed the sides with very bad Gothic; and then added a Roman portico, magnificent and beautiful indeed, but which had no affinity with the ancient parts that remained, and made his own Gothic appear ten times heavier. He committed the same error at Winchester, thrusting a screen in the Roman or Grecian taste into the middle of that cathedral. Jones indeed was by no means successful when he attempted Gothic. The chapel of Lincoln's Inn has none of the characteristics of that architecture. The cloyster beneath seems oppressed by the weight of the building above.

The authors of the life of Jones place the erecting of the Banqueting-house in the reign of king Charles; but it appears, from the accounts of Nicholas Stone, that it was begun in 1619, and finished in two years—a small part of the pile designed for the place of our kings; but so complete in itself, that it stands a model of the most pure and beautiful taste. Several plates of the intended palace at Whitehall have been given; but

Jones.

but Mr Walpole thinks, from no finished design. The four great sheets are evidently made up from general hints; nor could such a source of invention and taste as the mind of Inigo ever produce so much sameness. The whole fabric, however, was so glorious an idea, that one forgets for a moment (says Mr Walpole), in the regret for its not being executed, the confirmation of our liberties, obtained by a melancholy scene that passed before the windows of that very Banqueting-house.

In 1623 he was employed at Somerset-house, where a chapel was to be fitted up for the Infanta, the intended bride of the prince. The chapel is still in being. The front to the river, part only of what was designed, and the water-gate, were erected afterwards on the designs of Inigo, as was the gate at York-stairs.

On the accession of Charles, Jones was continued in his posts under both king and queen. His fee as surveyor was 8s. 4d. a day, with an allowance of 46l. a-year for house-rent, besides a clerk, and incidental expences. What greater rewards he had, are not upon record.

During the prosperous state of the king's affairs, the pleasures of the court were carried on with much taste and magnificence. Poetry, painting, music, and architecture, were all called in to make them rational amusements. Mr Walpole is of opinion, that the celebrated festivals of Louis XIV. were copied from the shows exhibited at Whitehall, in his time the most polite court in Europe. Ben Johnson was the laureat; Inigo Jones the inventor of the decorations; Lanier and Ferrabosco composed the symphonies; the king, the queen, and the young nobility, danced in the interludes. We have accounts of many of those entertainments, called *masques*; they had been introduced by Anne of Denmark. Lord Burlington had a folio of the designs for these solemnities, by Inigo's own hand, consisting of habits, masks, scenes, &c. The harmony of these masks was a little interrupted by a war that broke out between the composers, Inigo and Ben; in which, whoever was the aggressor, the turbulent temper of Johnson took care to be most in the wrong.

The works of Inigo Jones are not scarce; Surgeon's hall is one of his best works. One of the most admired is the Arcade of Covent-garden, and the Church: "Two structures (says Mr Walpole), of which I want taste to see the beauties. In the arcade there is nothing remarkable; the pilasters are as arrant and homely stripes as any plasterer would make. The barn-roof over the portico of the church strikes my eyes with as little idea of dignity and beauty, as it could do if it covered nothing but a barn. It must be owned, that the defect is not in the architect, but in the order.—Who ever saw a beautiful Tuscan building? Would the Romans have chosen that order for a temple?" The expence of building that church was 4500l.

Ambresbury in Wiltshire was designed by Jones, but executed by his scholar Webb. Jones was one of the first that observed the same diminution of pilasters as in pillars. Lindsay-house in Lincoln's-Inn Fields, which he built, owes its chief grace to this singularity. In 1618 a special commission was issued to the lord chancellor, the earls of Worcester, Pembroke,

Jones.

Arundel, and others, to plant and reduce to uniformity, Lincoln's-Inn Fields, as it shall be drawn by way of map, or ground-plot, by Inigo Jones, surveyor-general of the works. That square is laid out with a regard to so trifling a singularity, as to be of the exact dimensions of one of the pyramids: this would have been admired in those ages when the Keep at Kenilworth Castle was erected in the form of an horseshoe, and the Escorial in the shape of St. Laurence's gridiron.

Colehill in Berkshire, the seat of Sir Matthew Pleydell, built in 1650, and Cobham-hall in Kent, were Jones's. He was employed to rebuild Castle Ashby, and finished one front: but the civil war interrupted his progress there and at Stoke-park in Northamptonshire. Shaftsbury-house, now the London Lying-in hospital, on the east side of Aldersgate-street, is a beautiful front. The Grange, the seat of the lord chancellor Henley in Hampshire, is entirely of this master. It is not a large house, but by far one of the best proofs of his taste. The hall, which opens to a small vestibule with a cupola, and the stair-case adjoining, are beautiful models of the purest and most classic antiquity. The gate of Beaufort-garden at Chelsea, designed by Jones, was purchased by lord Burlington, and transported to Chiswick. He drew a plan for a palace at Newmarket; but not that wretched hovel that stands there at present. One of the most beautiful of his works is the Queen's house at Greenwich. The first idea of the hospital is said to have been taken by his scholar Webb, from his papers.

Inigo tasted early the misfortunes of his master. He was not only a favourite, but a Roman Catholic: in 1646, he paid 545l. for his delinquency and sequestration. Whether it was before or after this fine, it is uncertain, that he and Stone the mason buried their joint stock in Scotland-yard; but an order being published to encourage the informers of such concealments, and four persons being privy to the spot where the money was hid, it was taken up, and reburied in Lambeth-marsh. Grief, misfortunes, and age, put an end to his life at Somerset-house, July 21. 1651. Several of his designs have been published by Mr Kent, Mr Colin Campbell, and Mr Isaac Ware. He left in MS. some curious notes on Palladio's architecture, which are inserted in an edition of Palladio published in 1714.

IONIA, a country of Asia minor, bounded on the north by Æolia, on the west by the Ægean and Icarian seas, on the south by Caria, and on the east by Lydia and part of Caria. It was founded by colonies from Greece and particularly Attica, by the Ionians or subjects of Ion. Ionia was divided into 12 small states which formed a celebrated confederacy often mentioned by the ancients. These 12 states were Priene, Miletus, Colophon, Clazomenæ, Ephesus, Lebedos, Teos, Phocæa, Erythræ, Smyrna, and the capitals of Samos and Chios. The inhabitants of Ionia built a temple which they called *Pan Ionium* from the concourse of people that flocked there from every part of Ionia. After they had enjoyed for some time their freedom and independence, they were made tributary to the power of Lydia by Cræsus. The Athenians assisted them to shake off the slavery of the Asiatic monarchs; but they soon forgot their duty and relation

Ionian
Jordano.

tion to their mother-country, and joined Xerxes when he invaded Greece. They were delivered from the Persian yoke by Alexander, and restored to their original independence. They were reduced by the Romans under the dictator Sylla. Ionia has been always celebrated for the salubrity of the climate, the fruitfulness of the soil, and the genius of its inhabitants.

IONIC ORDER. See ARCHITECTURE, no 45.

IONIC *Dialect*, in grammar, a manner of speaking peculiar to the people of Ionia.

IONIC *Señ* was the first of the ancient sects of philosophers; the others were the Italic and Eleatic. The founder of this sect was Thales, who, being a native of Miletus in Ionia, occasioned his followers to assume the appellation of *Ionian*: Thales was succeeded by Anaximander, and he by Anaximenes, both of Miletus; Anaxagoras Clazomenius succeeded them, and removed his school from Asia to Athens, where Socrates was his scholar. It was the distinguishing tenet of this sect, that water was the principle of all natural things.

IONIUM MARE, a part of the Mediterranean Sea, at the bottom of the Adriatic. It lies between Sicily and Greece. That part of the *Ægean* sea which lies on the coasts of Ionia in Asia, is called the *Sea of Ionia*, and not the *Ionian Sea*. According to some authors, the Ionian sea receives its name from Io, who swam across there after she had been metamorphosed into a heifer.

JONK, or JONQUE, in naval affairs, is a kind of small ship, very common in the East Indies. These vessels are about the bigness of our fly-boats; and differ in the form of their building, according to the different methods of naval architecture used by the nations to which they belong. Their sails are frequently made of mats, and their anchors are made of wood.

JONSTON (John), a learned Polish naturalist and physician, born in 1603. He travelled all over Europe, and procured esteem every where by his knowledge; afterward he bought the estate of Ziebendorf in the duchy of Lignitz in Silesia, where he spent the remainder of his days. He wrote a natural history of birds, fish, quadrupeds, insects, serpents, and dragons, in folio; a piece upon the Hebrew and Greek festivals, a thaumatography, and some poems. He died in 1675.

JOPPA, a sea-port town in Palestine, lying south of Casarea; and anciently the only port to Jerusalem, whence all the materials sent from Tyre towards the building of Solomon's temple were brought hither and landed, (2 Chr. ii. 16.) It is said to have been built by Japhet, and from him to have taken its name *Japho*, afterwards moulded into *Joppa*; and the very heathen geographers speak of it as built before the flood. It is now called *Jaffa*, somewhat nearer to its first appellation, and is but in a poor and mean condition.

JOR, the Hebrew for a river, which, joined with Dan, concurs to form the term *Jordan*. See DAN.

JORDANO (Luca), an eminent Italian painter, was born at Naples in 1632. He became very early a disciple of Joseph Ribera; but going afterwards to Rome, he attached himself to the manner of Pietro da Cortona, whom he assisted in his great works. Some of his pictures being seen by Charles II. king of

Spain, he engaged him in painting the Escorial; in which task he acquitted himself as a great painter. The king showed him a picture of Bassani, expressing his concern that he had not a companion: Luca painted one so exactly in Bassani's manner, that it was taken for a performance of that master; and for this service he was knighted, and gratified with several honourable and valuable employments. The great works he executed in Spain, gave him still greater reputation when he returned to Naples; so that though he was a very quick workman, he could not supply the eager demands of the citizens. No one, not even Tintoret, ever painted so much as Jordano; and his generosity carried him so far as to present altar-pieces to churches that were not able to purchase them. His labours were rewarded with great riches; which he left to his family, when he died, in 1705.

JORDANS (James), one of the most eminent painters of the Flemish school, was born at Antwerp in 1593. He learned the principles of his art from Adam Van Ort, whose daughter he married; which connection hindered him from gratifying his inclination of visiting Italy. He improved most under Rubens; for whom he worked, and from whom he drew his best principles: his taste directed him to large pieces; and his manner was strong, true, and sweet. A great number of altar-pieces painted by him are preserved in the churches in the Netherlands, which maintain the reputation of this artist. He died in 1678.

JORTIN (John), a very learned and ingenious English clergyman, was born in Huntingdonshire, about the year 1701. Having some private fortune of his own, and being of a peculiar disposition that could not solicit promotion, he remained long without preferment. In 1738, lord Winchester gave him the living of Eastwell in Kent; but the place not agreeing with his health, he soon resigned it. Archbishop Herring, who had a great value for him, about the year 1751 presented him to the living of St Dunstan's in the East; and bishop Osbaldeston in 1762 gave him that of Kensington, with a prebend in St Paul's cathedral, and made him archdeacon of London. His temper, as well as his aspect, was rather morose and saturnine; but in company that he liked, he was at all times facetious, yet still with a mixture of *sal censura superiorum*. His sermons were sensible and argumentative; and would have made more impression on his hearers, had he been more attentive to the advantages flowing from a good delivery: but he appeared to greater advantage as a writer. His remarks on ecclesiastical history, his six dissertations, his life of Erasmus, and his sermons, were extremely well received by the public, and have undergone several editions. He died in the year 1770.

JOSEPH, the son of Jacob; memorable for his chastity, and the honours conferred on him at the court of Egypt, &c. He died in 1635 B. C. aged 110.

JOSEPHUS, the celebrated historian of the Jews, was of noble birth, by his father Mattathias descended from the high-priests, and by his mother of the blood-royal of the Maccabees; he was born A. D. 37, under Caligula, and lived under Domitian. At 16 years of age he betook himself to the sect of the Essenes, and then to the Pharisees; and having been successful in a journey

Jordan
Josephus.

Joshua
||
Joubert.

journey to Rome, upon his return to Judæa he was made captain-general of the Galileans. Being taken prisoner by Vespasian, he foretold his coming to the empire, and his own deliverance by his means. He accompanied Titus at the siege of Jerusalem, and wrote his "Wars of the Jews," which Titus ordered to be put in the public library. He afterwards lived at Rome, where he enjoyed the privileges of a Roman citizen, and where the emperors loaded him with favours, and granted him large pensions. Besides the above work, he wrote, 1. Twenty books of Jewish antiquities, which he finished under Domitian. 2. Two books against Appian. 3. An elegant discourse on the martyrdom of the Maccabees. 4. His own life. These works are excellently written in Greek.

JOSHUA, the renowned general of the Jews, who conducted them through the wilderness, &c. died in 1424 B. C. aged 110.

JOSHUA, a canonical book of the Old Testament, containing a history of the wars and transactions of the person whose name it bears. This book may be divided into three parts: the first of which is a history of the conquest of the land of Canaan; the second, which begins at the 12th chapter, is a description of that country, and the division of it among the tribes; and the third, comprised in the two last chapters, contains the renewal of the covenant he caused the Israelites to make, and the death of their victorious leader and governor. The whole comprehends a term of 17, or, according to others, of 27 years.

JOSIAH, king of Judah; the destroyer of idolatry, and the restorer of the true worship, an excellent magistrate, and a valiant general, was slain in battle, 609 P. C.

JOTAPATA (anc. geog.), a town of the Lower Galilee, distant 40 stadia from Gabara; a very strong place, situated on a rock, walled round, and encompassed on all hands with mountains, so as not to be seen but by those who came very near. It was with great difficulty taken by Vespasian, being defended by Josephus, who commanded in it; when taken, it was ordered to be razed.

JOUBERT (Lawrence), counsellor and physician to the king of France, chancellor and judge of the university of Montpellier, was born at Valance in Dauphiny in 1530. He became the disciple of Rondelet at Montpellier; and at his death succeeded to the regius professorship of that university, where he had given abundant proofs of his merit, and strengthened his reputation by the lectures he read in that capacity, as well as by the works he published. Henry III. who passionately wished to have children, sent for him to Paris, in hopes by his assistance to render his marriage fruitful; but he was disappointed, without any loss of repute to Joubert. Much offence was indeed taken at a piece he published under the title of *Vulgar errors*, in which he treated of virginity and generation more plainly than had ever before been done in the French language. But, though he had promised something more on the same subject, he was so piqued at the clamour raised against it, that the public saw no more, of six parts promised, than the first, and part of the second, though they were greatly called for. He died in 1582; and his son Isaac translated some of his Latin paradoxes into French.

Jovian
||
Journal.

JOVIAN, the Roman emperor, elected by the army, after the death of Julian the apostate, in 363. He at first refused, saying he would not command idolatrous soldiers; but, upon an assurance that they would embrace Christianity, he accepted the throne, and immediately shut all the Pagan temples, and forbid their sacrifices. But he did not long enjoy the dignity to which his merit had raised him; being suffocated in his bed by the fumes of a fire that had been made to dry the chamber, in 364, the 33d of his age, and the eighth month of his reign. See CONSTANTINOPLE, n^o 67.

JOVIUS (Paul), in Italian *Giovio*, a celebrated historian, was born at Como in Italy, in the year 1483. As his father died in his infancy, he was educated by his eldest brother Benedict Jovius, under whom he became well skilled in classical learning; and then went to Rome, for the sake of enjoying the benefit of the Vatican library. He there wrote his first piece, *De piscibus Romanis*, which he dedicated to cardinal Lewis of Bourbon. He received a pension of 500 crowns for many years from Francis I. king of France, whose favour he secured by his flatteries. But, in the following reign, having disgusted the constable Montmorency, his name was struck out of the list of pensioners. Jovius did not suffer his spirits to sink under his misfortune: he had obtained a high reputation in the learned world by his writings; and having always showed great respect to the house of Medicis, on whose praises he had expatiated in his works, he applied to Clement VII. and obtained the bishoprick of Nocera. His principal piece is his history, which is that of his own time throughout the world, beginning with 1494, and extending to the year 1544. This was the chief business of his life. For he formed the plan of it in the year 1515; and continued upon it till his death, which happened at Florence in 1552. It is printed in three volumes folio. He is allowed to have been a man of wit as well as learning: he was master of a bright and polished style, and has many curious observations: but being a venal writer, his histories are not much credited.

JOURNAL, a day-book, register, or account of what passes daily. See DIARY.

JOURNAL, in Merchants Accounts, is a book into which every particular article is posted out of the waste-book, and made debtor. This is to be very clearly worded, and fairly engrossed. See *Book-Keeping*.

JOURNAL, in navigation, a sort of diary, or daily register of the ship's course, winds, and weather; together with a general account of whatever is material to be remarked in the period of a sea-voyage.

In all sea-journals, the day, or what is called the 24 hours, terminates at noon, because the errors of the dead-reckoning are at that period generally corrected by a solar observation. The daily compact usually contains the state of the weather; the variation, increase, or diminution of the wind; and the suitable shifting, reducing, or enlarging the quantity of sail extended; as also the most material incidents of the voyage, and the condition of the ship and her crew; together with the discovery of other ships or fleets, land, shoals, breakers, soundings, &c.

JOURNAL, is also a name common for weekly essays.

NEW.

Journal newspapers, &c. as the Gray's-Inn journal, the Westminster journal, &c.

JOURNAL, is also used for the titles of several books which come out at stated times, and give abstracts, accounts, &c. of the new books that are published, and the new improvements daily made in arts and sciences; as the *Journal de Sçavans*, *Journal de Physique*, &c.

JOURNEY, a tract of ground passed over in travelling by land; properly as much as may be passed over in one day.

Management of a Horse on a JOURNEY. See **HORSE**.

JOURNEYMAN, properly one who works by the day only; but the word is now used for any one who works under a master, either by the day, the year, or the piece.

JOUENET (John), a celebrated French painter, was born at Rouen in 1644; where his father, who was a painter, bred him up to the same profession: but his greatest improvement was confessedly derived from the instructions of Nicholas Poussin, and studying the works of that master. He acquired so good a knowledge of design, as qualified him for employment in several grand works in the palaces at Paris and Trianon; in many of the churches and convents; and in the hospital of invalids, where he painted the twelve apostles, each figure being 14 feet high. He was esteemed to have a ready invention, to be correct in his designs, and to have a taste for grandeur in his compositions: it is observed of this artist, that being deprived of the use of his right hand by a paralytic disorder, he nevertheless continued to paint with his left. He died in the year 1717.

JOY, in ethics, is that passion which is produced by love, regarding its object as present, either immediately or in prospect, in reality or imagination. This passion has been found to increase the **PERSPIRATION** and urine of human bodies.

JOYNERY. See **JOINERY**.

IPECACUANHA, in the materia medica, a West-Indian root, of which there are principally two kinds, distinguished by their colour, and brought from different places; but both possessing the same virtues, tho' in a different degree. The one is ash-coloured or grey, and brought from Peru; the other is brown, and is brought from the Brasils: and these are indifferently sent into Europe under the general name of *ipecacuanha*.

These two sorts have been by some supposed to be the roots of two different plants: but, according to others, this is a mistake; the only difference being that one grows in a different place, and in a richer and moister soil, and is better supplied with juices than the other. The plant they belong to is a species of **Psychotria**.

The ash-coloured ipecacuan is a small wrinkled root, bent and contorted into a great variety of figures, brought over in short pieces full of wrinkles, and deep circular fissures, quite down to a small white woody fibre that runs in the middle of each piece: the cortical part is compact, brittle, looks smooth and resinous upon breaking: it has very little smell; the taste is bitterish and subacid, covering the tongue as it were with a kind of mucilage. The brown sort is small, and somewhat more wrinkled than the foregoing; of a brown or blackish colour without, and white with-

in. The first sort, the ash-coloured or grey ipecacuan, is that usually preferred for medicinal use. The brown has been sometimes observed, even in a small dose, to produce violent effects. A third sort, called the *white* from its colour, has also been distinguished. It is woody, has no wrinkles, and no perceptible bitterness in taste. This, though taken in a large dose, has scarce any effect at all. It is supposed to belong to a species of **VIOLA**. Mr Geoffroy calls this sort *bastard ipecacuan*, and complains that it is an imposition upon the public. Geoffroy, Neumann, Dale, and Sir Hans Sloane, inform us, that the roots of a kind of apocynum (dogs-bane) are too frequently brought over instead of it; and instances are given of ill consequences following from the use of it. But if the marks above laid down, particularly the ash colour, brittleness, deep wrinkles, and bitterish taste, be carefully attended to, all mistakes of this kind may be prevented.

Ipecacuan was first brought into Europe about the middle of last century, and an account of it published about the same time by Piso; but it did not come into general use till about the year 1686, when Helvetius, under the patronage of Louis XIV. introduced it into practice. This root is one of the mildest and safest emetics with which we are acquainted; and has this peculiar advantage, that if it should not operate by vomit, it passes off by the other emunctories. It was first introduced among us with the character of an almost infallible remedy in dysenteries, and other inveterate fluxes, as menorrhagia and leucorrhœa, and also in disorders proceeding from obstructions of long standing: nor has it lost much of its reputation by time. In dysenteries, it almost always produces happy effects, and often performs a cure in a very short space of time. In other fluxes of the belly, in beginning dysenteries, and such as are of a malignant kind, or where the patient breathes a tainted air, it has not been found equally successful: in these cases it is necessary to continue the use of this medicine for several days, and to join with it opiates, diaphoretics, and the like. This root, given in substance, is as effectual, if not more so, than any of the preparations of it: the pure resin acts as a strong irritating emetic, but is of little service in dysenteries; while an extract prepared with water is almost of equal service in these cases with the root itself, though it has little effect as an emetic. Geoffroy concludes from hence, that the chief virtue of ipecacuan in dysenteries depends upon its gummy substance, which lining the intestines with a soft mucilage, when their own mucus has been abraded, occasions their ulcerations to heal, and defends them from the acrimony of the juices: and that the resinous part, in which the emetic quality resides, is required, where the morbid matter is lodged in the glands of the stomach and intestines. But if the virtues of this root were entirely owing to its mucilaginous or gummy part, pure gums, or mucilages, might be employed to equal advantage. Water, assisted by a boiling heat, takes up from all vegetables a considerable portion of resinous along with the gummy matter: if the ipecacuan remaining after the action of water be digested with pure spirit, it will not yield half so much resin as at first: so that the aqueous extract differs from the crude root only in degree, being proportionably less resinous.

Ipecacuanha.

resinous, and having less effect, both as an emetic, and in the cure of dysenteries. The virtues of ipecacuan, in this disorder, depend upon its promoting perspiration, the freedom of which is here of the utmost importance, and an increase of which, even in healthful persons, is generally observed to suppress the evacuation by stool. In dysenteries, the skin is for the most part dry and tense, and perspiration obstructed: the common diaphoretics pass off without effect through the intestinal canal: but ipecacuan, if the patient after a puke or two be covered up warm, brings on a plentiful sweat. After the removal of the dysentery, it is necessary to continue the use of the medicine for some time longer, in order to prevent a relapse; for this purpose, a few grains divided into several doses, so as not to occasion any sensible evacuation, may be exhibited every day; by this means the cure is effectually established. And indeed small doses given, even from the beginning, have been often found to have better effects in the cure of this disease than larger ones. Geoffroy informs us from his own experience, that he has observed ten grains of the powder to act as effectually as a scruple or two; and therefore confines the dose betwixt six and ten grains: it has lately been found, that even smaller doses prove sufficiently emetic. The only official preparation of this root is a tincture made in wine, which accordingly has now the appellation of *vinum ipecacuanhae*, both in the London and Edinburgh pharmacopœias.

Many ingenious experiments have been made on the subject of ipecacuan by Dr Irving, for which he obtained the prize medal of the Harveian Society at Edinburgh for 1784. He has ascertained, that while this root contains a gummy resinous matter, yet that the gummy exerts in a much greater proportion than the resinous part; that the gummy part is much more powerfully emetic than the resinous; that although the cortical part of the root be more active than the ligneous, yet that even the pure ligneous part possesses a considerable emetic power; and that the whole of the root possesses considerable influence, both as an antispasmodic and astringent. To determine whether the emetic power of ipecacuan was of a volatile or fixed nature, Dr Irving subjected it to distillation. The water obtained by distillation was found to have very little influence; but the decoction which remained in the still, not only operated violently as an emetic, but produced rigours, cold sweats, and other alarming symptoms. By long continued boiling, the activity of the root itself is almost totally destroyed; but Dr Irving found, that the emetic property of ipecacuan was most effectually counteracted by means of the acetous acid, in so much that thirty grains of the powder taken in two ounces of vinegar produced only some loose stools.

Ipecacuan, particularly in the state of powder, is now advantageously employed in almost every disease in which full vomiting is indicated; and when combined with opium under the form of the *pulvis sudorificus*, it furnishes us with the most useful and active sweating medicine which we possess. It is also often given with advantage in very small doses, so as neither to operate by vomiting, purging, nor sweating.

The full dose of the powder is a scruple or half a dram, and double that in form of watery infusion. The full dose is recommended in the paroxysm of

spasmodic asthma, and a dose of three or four grains every morning in habitual asthmatic indisposition. A dose of $\frac{1}{4}$ or $\frac{1}{2}$ grain rubbed with sugar, and given every four hours or oftener, is recommended in uterine hemorrhagy, cough, pleurisy, hæmoptoe, &c. and has often been found highly serviceable.

IPHIGENIA, a daughter of Agamemnon and Clytemnestra. When the Greeks going to the Trojan war were detained by contrary winds at Aulis, they were informed by one of the soothsayers, that to appease the gods they must sacrifice Iphigenia Agamemnon's daughter to Diana. The father, who had provoked the goddess by killing her favourite stag, heard this with the greatest horror and indignation; and rather than to shed the blood of his daughter, he commanded one of his heralds, as chief of the Grecian forces, to order all the assembly to depart each to his respective home. Ulysses and the other generals interfered, and Agamemnon consented to immolate his daughter for the common cause of Greece. As Iphigenia was tenderly loved by her mother, the Greeks sent for her on pretence of giving her in marriage to Achilles. Clytemnestra gladly permitted her departure, and Iphigenia came to Aulis. Here she saw the bloody preparations for the sacrifice. She implored the forgiveness and protection of her father; but tears and entreaties were unavailing. Calchas took the knife in his hand; and as he was going to strike the fatal blow, Iphigenia suddenly disappeared, and a god of uncommon size and beauty was found in her place for the sacrifice. This supernatural change animated the Greeks, the wind suddenly became favourable, and the combined fleet set sail from Aulis.

IPICRATES, general of the Athenians, had that command conferred upon him at 20 years of age, and became famous for the exactness of his military discipline. He made war on the Thracians; restored Sentes, who was an ally of the Athenians; attacked the Lacedæmonians; and, on many other occasions, gave signal proofs of his conduct and courage. Many ingenious repartees have been mentioned of this general: a man of good family with no other merit than his nobility, reproaching him one day for the meanness of his birth, he replied, "I shall be the first of my race, and thou the last of thine." He died 380.B.C.

IPOMEA, *QUAMOILIT*, or *Scarlet Corvolvulus*: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking under the 29th order, *Campanacea*. The corolla is funnel-shaped; the stigma round-headed; the capsule trilobular. There are several species; but not more than one, (the coccinea), cultivated in our gardens. This hath long, slender, twining stalks, rising upon support six or seven feet high. The leaves are heart-shaped, pointed, and angulated at the base, and from the sides of the stalks and branches arise many slender footstalks; each supporting several large and beautiful funnel-shaped and scarlet flowers. There is a variety with orange-coloured flowers. Both of them are annual, rising from seed in spring, flowering in July and August, ripening their seeds in September and October, and totally perishing in a short time after. They are tender, and must be brought up in a hot-bed till the latter end of May or beginning of

Iphigenia
||
Ipomea.

June, when they may be planted out to adorn the borders, or some may be planted in pots to move occasionally to adorn any particular place; but in either case, there must be sticks for them to twine upon.

IPSWICH, the capital of the county of Suffolk in England, seated in E. Long. 1. 6. N. Lat. 52. 12. The name comes from the Saxon *Gyðeswīc*, that is, a town situated upon the Gyppen, now called *Orwell*. It had once 21 churches, but now has only 12. It was plundered by the Danes in 991, and afterwards besieged by king Stephen. It had charters and a mint in the reign of king John, but its last charter was from Charles II. The remains of a wall and six or seven religious houses are still to be seen. Though it is not in so flourishing a state as formerly when the harbour was more commodious, yet it is still a large well-built town. Besides the churches already mentioned, it has several meeting-houses, two chapels, a town-hall, council-chamber, a large market-place with a cross in the middle of it, a shire-hall for the county-sessions, a library, several hospitals, a free-school, a handsome stone-bridge over the river, stately shambles in the market-place built by cardinal Wolsey, who was a native of the town and a butcher's son, and who also began to build a college here on the ruins of a small college of black canons, which still bears his name, though it was never finished. Here are also several alms-houses, three charity-schools, and a convenient key and custom-house. By virtue of Charles II.'s charter, the town is governed by two bailiffs, a recorder, 12 portmen, of whom the bailiffs are two, a town-clerk, two coroners, and 24 common-council. The bailiffs and 4 of the portmen are justices of the peace. The town enjoys a great many privileges, as passing fines and recoveries, trying criminal, and even crown and capital causes among themselves, settling the assize of bread, wine, and beer. No freeman is obliged to serve on juries out of the town, or bear any office for the king, except that of the sheriff, or to pay tolls or duties in any other part of the kingdom. They have an admiralty jurisdiction beyond Harwich on the Essex coast, and on both sides the Suffolk coast, by which they are intitled to all goods cast on shore. The bailiffs even hold an admiralty-court beyond Landguard-fort. By a trial in king Edward III.'s time, it appears that the town had a right to the custom-duties for all goods coming into Harwich-haven. They claim a right also to all waives and strays, &c. The manufactures of the town are chiefly woollen and linen cloth. It has still a considerable foreign trade. The tide rises pretty high, and brings great ships within a small distance of the town. They export a great deal of corn to London, and sometimes to Holland. Formerly, they had a great trade in ship-building; but that having declined, they now send great quantities of timber to the king's yard at Chatham. It has several great fairs for cattle, cheese, and butter; and is admirably situated for the trade to Greenland, because the same wind that carries them out of the river will carry them to Greenland. It is worth remarking, that it is one of the best places in England for persons in narrow circumstances, house-rent being easy, provisions cheap and plentiful, the passage by land or water to London, &c. convenient.

N^o 168.

nient, and the company of the place good. It gives title of viscount, as well as Thetford, to the duke of Grafton; and sends two members to parliament.

IRASCIBLE, in the old philosophy, a term applied to an appetite or a part of the soul, where anger and the other passions, which animate us against things difficult or odious, were supposed to reside.

Of the eleven kinds of passions attributed to the soul, philosophers ascribe five to the irascible appetite; viz. wrath, boldness, fear, hope, and despair: the other six are charged on the concupiscible appetite, viz. pleasure, pain, desire, aversion, love, and hatred.

Plato divided the soul into three parts; the reasonable, irascible, and concupiscible parts. The two last, according to that philosopher, are the corporeal and mortal parts of the soul, which give rise to our passions.

Plato fixes the seat of the irascible appetite in the heart; and of the concupiscible in the liver; as the two sources of blood and spirits, which alone affect the mind.

IRELAND, one of the Britannic islands, situated between the 5th and 10th degrees of west longitude, and between the 51st and 56th of north latitude, extending in length about 300 miles, and about 150 in breadth.

The ancient history of this island is involved in so much obscurity, that it has been the object of contention among the antiquarians for upwards of a century and an half. The Irish historians pretend to very great antiquity. According to them, the island was first inhabited about 322 years after the flood. At that time Partholanus the son of Scara landed in Munster on the 14th of May with 1000 soldiers, and some women, from Greece. This voyage he had undertaken on account of his having killed his father and mother in his native country. The same historians inform us, that a great number of lakes broke out in Ireland during the reign of Partholanus, which had no existence when he came into the island, with many other particulars not worth mentioning; but the most surprising circumstance is, that about 300 years after the arrival of this Grecian colony, all of them perished by a plague, not a single person remaining to tell the fate of the rest; in which case, it is wonderful how the catastrophe should have been known.

After the extinction of this first colony, Ireland remained a perfect wilderness for 30 years; when another colony arrived from the east, under the direction of one Nemedius. He set sail from the Euxine sea with 30 transports, each manned with 40 heroes; and at last arrived on the coasts of Ireland, after a very tedious and strange navigation. During his reign also many lakes were formed in the country, which had no existence before; the most material circumstance, however, was an unsuccessful war in which he was engaged with some African pirates, who in the end enslaved his people. The victors proved such insupportable tyrants, that the Irish found themselves under a necessity of quitting the island altogether. They embarked on board a fleet of 1130 ships, under the command of three grandsons of Nemedius, viz. Simon Breac, To Chath, and Briatan Maol. The first returned to Greece, the second sailed to the northern parts of Europe,

Irascible,
Ireland.

Origin of
the Irish
according to
their own
historians.



10

Ireland.

rope, and the third landed in the north of Scotland, and from him the island of Britain is said to have taken its name, and the Welsh their origin.

About 216 years after the death of Nemedius, the descendants of Simon Breac returned from Greece into Ireland. They were conducted by five princes of great reputation, who divided the island into five kingdoms, nearly equal in size. These kingdoms were called *Munster*, *Deinst*, *Connaught*, *Meath*, and *Ulster*; and the subjects of these kings are called by the Irish historians *Firbolgs*.

The *Firbolgs* were in process of time expelled or totally subdued, after the loss of 100,000 men in one battle, by the *Tuath de Dannans*, a nation of necromancers who came from Attica, Boeotia, and Achaia, into Denmark; from Denmark to Scotland; and from Scotland to Ireland. These necromancers were so completely skilled in their art, that they could even restore the dead to life, and bring again into the field those warriors who had been slain the day before. They had also some curiosities which possessed a wonderful virtue. These were a sword, a spear, a cauldron, and a marble chair; on which last were crowned first the kings of Ireland, and afterwards those of Scotland. But neither the powerful virtues of these Danish curiosities, nor the more powerful spells of the magic art, were able to preserve the *Tuath de Dannans* from being subdued by the Gadelians when they invaded Ireland.

The Gadelians were descended from one Gathelus, from whom they derived their name. He was a man of great consequence in Egypt, and intimately acquainted with Moses the Jewish legislator. His mother was Scots, the daughter of Pharaoh, by Nul the son of a Scythian monarch cotemporary with Nimrod. The Gadelians, called also *Scots*, from Scots above-mentioned, conquered Ireland about 1300 B. C. under Heber and Heremon, two sons of Milesius king of Spain, from whom were descended all the kings of Ireland down to the English conquest, and who are therefore styled by the Irish historians princes of the *Milesian race*.

From this period the Irish historians trace a gradual refinement of their countrymen from a state of the grossest barbarity, until a monarch, named *Ollam Fodla*, established a regular form of government, erected a grand seminary of learning, and instituted the *Fes*, or triennial convention of provincial kings, priests, and poets, at Feamor or Tarah in Meath, for the establishment of laws and regulation of government. But whatever were the institutions of this monarch, it is acknowledged that they proved insufficient to withstand the wildness and disorder of the times. To Kimbath, one of his successors, the annalists give the honour of reviving them, besides that of regulating Ulster, his family province, and adorning it with a stately palace at Eamannia near Armagh. His immediate successor, called *Hugony*, is still more celebrated for advancing the work of reformation. It seems, that, from the earliest origin of the Irish nation, the island had been divided into the five provincial kingdoms above-mentioned, and four of these had been subject to the fifth, who was nominal monarch of the whole island. These four, however, proved such obstinate disturbers of the peace, that *Hugony*, to break their power,

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parcelled out the country into 25 dynasties, binding them by oath to accept no other monarch but one of his own family. This precaution proved ineffectual. *Hugony* himself died a violent death, and all his successors for a series of ages were assassinated, scarcely with one exception.

About 100 B. C. the pentarchal government was restored, and is said to have been succeeded by a considerable revolution in politics. The Irish bards had for many ages dispensed the laws, and the whole nation submitted to their decisions; but as their laws were exceedingly obscure, and could be interpreted only by themselves, they took occasion from thence to oppress the people, until at last they were in danger of being totally exterminated by a general insurrection. In this emergency they fled to Convocar-Mac-Nessa, the reigning monarch, who promised them his protection in case they reformed; but at the same time, in order to quiet the just complaints of his people, he employed the most eminent among them to compile an intelligible, equitable, and distinct, body of laws, which were received with the greatest joy, and dignified with the name of *celestial decisions*. These decisions seem to have produced but very little reformation among the people in general. We are now presented with a new series of barbarities, murders, factions, and anarchy; and in this disordered situation of affairs it was, according to the Irish historians, that the chieftain mentioned by Tacitus addressed himself to Agricola, and encouraged him to make a descent on Ireland. This scheme happened not to suit the views of the Roman general at that time, and therefore was not adopted; and so confident are these historians of the strength of their country even in its then distracted state, that they treat the notion of its being subdued by a Roman legion and some auxiliaries (the force proposed to Agricola), as utterly extravagant; acquainting us at the same time, that the Irish were so far from dreading a Roman invasion, that they failed to the assistance of the Picts, and having made a successful incursion into South Britain, returned home with a considerable booty.

In the same state of barbarity and confusion the kingdom of Ireland continued till the introduction of Christianity by St Patrick, about the middle of the fifth century. This missionary, according to the adversaries of the Irish antiquity, first introduced letters into Ireland, and thus laid the foundations of a future civilization. On the other hand, the advocates for that antiquity maintain, that the Irish had the knowledge of letters, and had made considerable progress in the arts, before the time of St Patrick; though they allow, that he introduced the Roman character, in which his copies of the Scripture and liturgies were written. To enter into the dispute would be contrary to our plan. It is sufficient to observe, that, excepting by some of the Irish themselves, the history already given is generally reckoned entirely fabulous, and thought to have been invented after the introduction of Christianity. An origin of the Irish nation hath been found out much nearer than Asia, Greece, or Egypt; namely, the island of Britain, from whence it is now thought that Ireland was first peopled. A dispute hath arisen concerning the place from whence the first emigrants from Britain set sail for Ireland. The honour

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of being the mother-country of the Irish hath been disputed between the North and South Britons. Mr Macpherson has argued strenuously for the former, and Mr Whitaker for the latter. For an account of their dispute, however, we must refer to the works of these gentlemen. Mr Whitaker claims the victory, and challenges to himself the honour of being the first who clearly and truly demonstrated the origin of the Irish.

Early history of Ireland by Mr Whitaker.

The name of Ireland, according to Mr Whitaker, is obviously derived from the word *Far* or *Eir*, which in the Celtic language signifies "west." This word was sometimes pronounced *Iver*, and *Hiver*; whence the names of *Iris*, *Ierna*, *Juerna*, *Iverna*, *Hibernia*, and *Ireland*; by all of which it hath at some time or other been known.

About 350 B. C. according to the same author, the Belgæ crossed the channel, invaded Britain, and seized the whole extended line of the southern coast, from Kent to Devonshire. Numbers of the former inhabitants, who had gradually retired before the enemy, were obliged at last to take shipping on the western coast of England, and passed over into the uninhabited isle of Ireland. These were afterwards joined by another body of Britons driven out by the Belgæ under Divitiacus, about 100 B. C. For two centuries and a half afterwards, these colonies were continually reinforced with fresh swarms from Britain; as the populousness of this island, and the vicinity of that invited them to settle in the one, or the bloody and successive wars in Britain during this period naturally induced them to relinquish the other: and the whole circuit of Ireland appears to have been completely peopled about 150 years after Christ: and as the inhabitants had all fled equally from the dominion of the Belgæ, or for some other cause left their native country, they were distinguished among the Britons by one general and very apposite name, viz. that of *Scythes*, or *Scots*, "the wanderers, or refugees."

Names and situation of the tribes by which it was inhabited.

Mr Whitaker also informs us, "that in the times of the Romans Ireland was inhabited by 18 tribes; by one upon the northern and three on the southern shore, seven upon the western, six on the eastern, and one in the centre.

"Along the eastern coast, and the Vergivian or internal ocean, were ranged the Damnii, the Voluntii, and the Eblani, the Caucii, the Menapii, and the Coriondii. The first inhabited a part of the two counties of Antrim and Down, extending from Fair-head, the most north-easterly extremity of the island, to Ifamnum Promontorium, or the point of Ardglash haven in the county of Down; and having the Logia or Lagan, which falls into Carrickfergus bay, within their possessions, and Dunum or Downpatrick for their capital. The Voluntii possessed the coast from the point of that haven to the river Buvinda or Boyne, the remainder of Down, the breadth of Ardmagh, and all Louth; having the Vinderus or Carlingford river in their dominions, and the town of Laberus near the river Deva (Atherdee in the county of Louth) for their metropolis. And the Eblani reached from the Boyne to the Lebius, Læv-ui, or Liffy; residing in East-Meath, and in the large portion of Dublin county which is to the north of this river; and acknowledging Mediolanum, Eblana, or Dublin, for their principal town. The

Ireland.

Caucii spread from the Liffy to the Letrim, the Oboca of the ancients; had the rest of Dublin county, and such parts of Wicklow as lie in the north of the latter; and owned Dunum or Rath-Downe for their chief city. The Menapii occupied the coast betwixt the Letrim and Canarne-point, all the rest of Wicklow, and all Wexford to the point; their chief town, Menapia, being placed upon and to the east of Modona, Slanus, or Slane. And the Coriondii inhabited at the back of the Caucii and Menapii, to the west of the Slane and Liffy, and in all Kildare and all Catherlogh; being limited by the Boyne and Barrow on the west, the Eblani on the north, and the Brigantes on the south.

"Upon the southern shore and along the verge of the Cantabrian ocean, lay the Brigantes, the Vodizæ, and the Ibernii. The first owned the rest of Wexford and all Waterford: extending to the Blackwater, Avenmore, or Dabrona, on the south-west; having the great mouth of the Barrow with their territories, and Brigantia, Waterford, or some town near it, for their first city; and giving name of *Brigas* to the Suir or Swire, their liminary stream on the north, and the appellation of *Bergie* to their own part of the county of Wexford. The Vodizæ possessed the shire of Corke from the Blackwater to the Ban, the river of Kinsale, and the Dobona or Dubana of the ancients; and affixed the name of *Vodium Promontorium* to the point of Balycotton island. And the Ibernii inhabited the remainder of Corke, and all that part of Kerry which lies to the south-east of Dingle-sound; having Rufina or Ibaune for their capital, the Promontorium Austrinum or Miffen-Head about the middle of their dominions, and the river Ibernus or Dingle-sound for their northern barrier; and leaving their names to the three divisions of Ibaune, Beare, and Iveragh.

"Upon the western shore of the island and along the Great Britannic or Atlantic ocean, were the Lucanii or Lucenii, the Velaborii, and the Cangani, the Auterii, the Nagnatzæ, the Hardinii, and Venicnii. The Lucenii inhabited the peninsula of land that lies along the river Ibernus or Dingle-sound, and perhaps some adjoining parts of Kerry. The Velaborii ranged along the small remainder of the latter, and over the whole of Limerick to the Senus or Shannon; having the Durus or Casheen flowing through their dominions, and Regia, Limerick or some town near it, for their metropolis. And the latter was probably that city near Limerick, the site of which is still famous, and retains the appellation of *Cathair*, or the fortress; and where the remains of streets, and other marks of a town, may yet be traced. The Cangani lived in the county of Clare: Macolicum near the Shannon, perhaps Feakle or Melic, being their principal town; a headland in the bay of Galway, near Glaniuy, being denominated *Benifamnum Promontorium*; and the adjoining isles of Arran called *Insula Cangana*. The Auterii were settled in the county of Galway; winding along the deep recess of the Sinus Aufoba or bay of Galway; stretching towards the north as far as the Libnius, or the river that bounds the shire in that part; and possessing the small portion of Mayo which lies to the south of it. And these were subject to Auterium, anciently Aterith, and now Athenree; and have left their name to the division of Athenree. The Nagnatzæ occupied the rest of

Ireland.

of the large county of Mayo, all Sligo and all Roscommon, all Letrim as far as Lough Allin on the south-east, and all Fermanagh to Ballyshannon and Lough Erne; being bounded by the Rhebius or river of Ballyshannon, and the Lake Rhebius or Lough Erne; having a deep bay, called *Magnus Sinus*, that curves along Mayo, Sligo, and Letrim counties; and acknowledging Nagnat, Necmaht, or Alneemaht, the town of the Nagnatæ, for their capital. And the Hardinii and Venicnii were confederated together under the title of the *Venicnians Nations*, extended from Ballyshannon to the North-Cape, and possessed all Donnegalle, except the two whole divisions of Raphoe and Enis-Owen, and the eastern part of Killmacrenen. The Venicnii lay along the immediate margin of the shore, giving name to the Promontorium Venicnium or Cape Horn, and to the Insula Venicnia or North-Arran island. And their metropolis Rheba was seated upon the lake Rhebius, and in the country of the Hardinii on the south-east.

"Upon the northern shore and along the margin of the Deucaledonian ocean, were only the Robogdii; inhabiting the rest of Donnegalle, all Derry, and all Antrim to the Fair-Head, and the Damnii; and giving their own name to the former and the division of Raphoe. And they had the rivers Vidua or Shipharbour, Arigta or Lough Swilly, Darabouna or Lough Foile, and Banna or Ban, in their territories; and acknowledged Robogdium, Robogh, or Raphoe, for their chief city.

"The central regions of the island, all Tyrone, the remainder of Fermanagh and Letrim, all Monaghan, and the rest of Ardmagh; all Cavan, all Longford, and all West-Meath; all the King's and Queen's county, all Kilkenny, and all Tipperary; were planted by the Scoti. The Shannon, Lough Allin, and Lough Erne, were their great boundaries on the west; the Barrow, Boyne, and Lough Neagh, on the east; the Swire and Blackwater on the south; and a chain of mountains on the north. And the two greatest of their towns were Rheba, a city seated, like the Rheba of the Venicnians, upon the lake and river Rhebius, but on a different part of them, and somewhere in the north of Cavan; and Ibernina, a town placed a little to the east of the Shannon, and somewhere in the county of Tipperary."

But whether we are to receive as truth the accounts given by Mr Whitaker, those of the Irish annalists, or any other, it is certain, that, till little more than a century ago, Ireland was a scene of confusion and slaughter. The Irish historians acknowledge this, as we have already seen. Very few of their monarchs escaped a violent death. The histories of their kings indeed amount to no more than this, viz. that they began to reign in such a year, reigned a certain number of years, and were slain in battle by the valiant prince who succeeded to the throne. The introduction of Christianity seems to have mended the matter very little, or rather not at all. The same wars between the chiefs continued; and the same murders and treacheries took place among the inhabitants, till they were invaded by the Danes or Normans, about the end of the eighth century. At this time, we are told, that the monarchical power was weak, by reason of the factions and assuming disposition of the inferior dyna-

Ireland.

sties; but that the evils of the political constitution had considerably subsided by the respect paid to religion and learning. The first invasions of the Danes were made in small parties for the sake of plunder, and were repelled by the chieftain whose dominions were invaded. Other parties appeared in different parts of the island, and terrified the inhabitants by the havoc they committed. These were in like manner put to flight, but never failed to return in a short time; and in this manner was Ireland harassed for the space of 20 years, before the inhabitants thought of putting an end to their intestine contests, and uniting against the common enemy. The northern pirates, either by force or treaty, gradually obtained some small settlements on the island; till at length Turges, or Turgesius, a warlike Norwegian, landed with a powerful armament in the year 815. He divided his fleet and army, in order to strike terror in different quarters. His followers plundered, burned, and massacred, without mercy, and persecuted the clergy in a dreadful manner on account of their religion. The Danes already settled in Ireland, flocked to the standard of Turgesius, who thus was enabled to seat himself in Armagh, from which he expelled the clergy, and seized their lands. The Irish, in the mean time, were infatuated by their private quarrels; till at last, after some ill-conducted and unsuccessful efforts, they sunk into a state of abject submission, and Turgesius was proclaimed monarch of the whole island in 845.

The new king proved such a tyrant, that he soon became intolerable. A conspiracy was formed against him; and he was seized by Melachline prince of Meath, in a time of apparent peace. An universal insurrection ensued; the Danes were massacred or dispersed; their leader condemned to death for his cruelties, and drowned in a lake. The foreigners, however, were not exterminated, but the remains of them were allowed to continue on the island as subjects or tributaries to some particular chieftains. A new colony soon arrived, but under pretence of peaceable intentions, and a design of enriching the country by commerce. The Irish, through an infatuated policy, suffered them to become masters of Dublin, Limerick, Waterford, and other maritime places, which they enlarged and fortified with such works as had till then been unknown in Ireland. The Danes did not fail to make use of every opportunity of enlarging their territories, and new wars quickly ensued. The Irish were sometimes victorious, and sometimes not; but were never able to drive out their enemies, so that they continued to be a very distinguished and powerful *sept*, or tribe, in Ireland. The wars with the Danes were no sooner at an end, than the natives, as usual, turned their arms against each other. The country was harassed by the competitions of the chiefs; laws and religion lost their influence, and the most horrid licentiousness and immorality prevailed. Thus the whole island seemed ready to become a prey to the first invader, when an attempt was made upon it by Magnus king of Norway. This attempt miscarried, through his own rashness; for, having landed without opposition, he advanced into the country without the least apprehension. The consequence of this was, that he was surrounded and cut in pieces with all his followers. His death, however, proved of little benefit to Ireland; the

Ireland. the same disorders which had gradually reduced the kingdom to a state of extreme weakness, still continued to operate, and to facilitate the success of the English invasion, which happened in the reign of Henry II.

5
Henry II.
of England
meditates
an invasion
of Ireland.

The first motives which induced this monarch to think of an expedition against Ireland are not well known. It was supposed that he had been provoked by some assistance which the Irish princes had given to the French; but, whatever might be in this, it is certain that the design was conceived soon after he ascended the throne; and his flatterers soon furnished him with sufficient reasons for considering the Irish as his subjects. It was affirmed that they had originally possessed themselves of their country by permission of Gurguntius a British king; and that, as descendants of the Britons, they were the natural and rightful subjects of the English monarch. It was also suggested, that the renowned King Arthur, Egfred the Northumbrian prince, and Edgar one of the Saxon kings of England, had all led their armies into Ireland, and there made valuable acquisitions, which their successor was in honour bound to recover and maintain. All these suggestions, however, or whatever else had occurred to himself, seemed yet insufficient to Henry; and therefore he took the most effectual method to ensure his reputation, namely, by an application to the pope. To him he represented, that the inhabitants of Ireland were sunk into the most wretched state of corruption, both with regard to morals and religion; that Henry, zealous for the honour and enlargement of God's kingdom, had conceived the pious design of erecting it in this unhappy country; was ready to devote himself and all his powers to this meritorious service; implored the benediction of the pontiff; and requested his permission and authority to enter Ireland, to reduce the disobedient and corrupt, to eradicate all sin and wickedness, to instruct the ignorant, and spread the blessed influence of the gospel in all its purity and perfection; promising at the same time to pay a yearly tribute to St Peter from the land thus to be reduced to his obedience, and to the holy see. Adrian, the reigning pope, rejoiced at this application which tended so much to the advancement of his own power. A bull was therefore immediately formed, conformable to the most sanguine wishes of Henry, which was sent to England without delay, together with a ring, the token of his investiture as rightful sovereign of Ireland. But whatever inclination the king of England or the pope might at this time (A. D. 1156) have for the subjection of Ireland, the situation of the English affairs obliged him to defer it for some time.

6
Is invested
with the
sovereignty
by the
pope.

7
State of
Ireland at
that time.

The state of Ireland, as we have already observed, was at this time extremely favourable for an invasion. The monarch enjoyed little more than a titular dignity, being harassed by a faction, and opposed by powerful rivals. A number of chieftains who assumed the title and rights of royalty, paid a precarious tribute to their superior, and united, if they were disposed to unite, with him, rather as his allies than his subjects. In Ulster, the family of the northern *Hi Nial*, as it was called, exercised an hereditary jurisdiction over the counties now called *Tirone*, *Derry*, and *Donnegal*. They also claimed a right of supremacy over the lords of *Fermanagh*, *Antrim*, and *Argial*, which included

the counties of *Armagh*, *Monaghan*, *Louth*, and some adjacent districts: while *Dunleve*, prince of *Uladh* (now *Down*), disputed the superiority of this family, and affected an independent state. In Munster reigned the descendants of *Brien*, a famous sovereign of former times, impatient to recover the honours of their family; but at last, being confined by powerful rivals to the territory of *North Munster*, they were obliged to leave the family of *Mac Arthy* sovereigns of *Desmond*, the southern division. In Connaught, the princes known by the name of *O'Connor* were acknowledged sovereigns of the eastern territory. *Tiernan O'Ruarc*, an active and restless military chief, had the supremacy in *Breifney*, containing the modern county of *Leitrim*, and some adjacent districts. *Meath*, or the southern *Hi Nial*, was subject to the family of *Clan-Colman*, *Murchard O'Malachlyn*, and his successors. *Leinster*, divided into several principalities, was subject to *Dermod*, a fierce, haughty, and oppressive tyrant. His father had governed with great cruelty. Seventeen of his vassal lords had been either put to death, or had their eyes put out, by his order in one year; and *Dermod* seemed to inherit too great a portion of the same temper. His stature and bodily strength made him admired by the inferior orders of his subjects, and these he was careful to protect and favour. His donations and endowments of religious houses recommended him to the clergy; but his tributary chieftains felt the weight of his pride and tyranny, and to them his government was extremely odious.

The chief competitors for the rank of monarch of Ireland, in the mean time, were, the heirs of the two houses of *O'Connor*, and the northern *Hi Nial*. *Torlogh O'Connor* was in possession; but he was not generally recognised, and was opposed by his rival *O'Lochlan*: notwithstanding which, he maintained his dignity with magnificence and vigour, till a decisive victory gained by him over *O'Brien* raised *O'Lochlan's* jealousy so much, that he obliged him in a convention of the states, to allow him the sovereignty of the northern division. In consequence of this partition, it was resolved to transfer the territory of *O'Ruarc* to a person more inclined to the interests of the two sovereigns. An expedition was accordingly undertaken; *O'Ruarc* was surprised, defeated, and driven from his dominions. *Dermod*, who had conceived an unlawful passion for *Dervorghal*, the wife of *O'Ruarc*, took the opportunity of her husband's distresses to carry her off in triumph. *O'Ruarc* conceived the most implacable resentment against *Dermod*; and therefore applying himself to *Torlogh*, promised an inviolable attachment to his interest; and prevailed on him not only to reinstate him in his possessions, but to revenge the insult offered by *Dermod*, and to restore his wife. By means of such a powerful ally, *O'Ruarc* found frequent opportunities of harassing his antagonist till the death of *Torlogh*, which happened in 1156, upon which *O'Lochlan* succeeded to the sovereignty. *Dermod* was the first to acknowledge the authority of this new sovereign, by whose means he hoped to be able to revenge himself on *O'Ruarc*. He soon found, however, that he had acted too precipitately. His patron, having treacherously seized and put out the eyes of *Dunleve* prince of *Down*, the neighbouring chieftains took arms,

Ireland. arms, in order to secure themselves from his barbarity. O'Lochlan was defeated and killed; upon which the monarchy devolved on Roderic the son of the late Turlough O'Connor.

The new prince had acquired the reputation of valour, and was determined to establish this reputation by some remarkable exploit in the beginning of his reign. Having therefore engaged in his service the O'ltmen, or descendants of the Danes, he marched against Dermot as the chief partizan of his fallen rival. The king of Leinster was seized with the utmost consternation; and in despair set fire to his own town of Ferns, lest the enemy should have the satisfaction of spoiling it. Roderic still advanced, attended by O'Ruarc, Dermot's implacable enemy, and soon overran the whole province. All the inferior lords at once acknowledged Roderic's authority. Dermot was deposed, as a man utterly unworthy of his station; another of his family was raised to the throne; and the unfortunate prince, finding it impossible to stay with safety in Ireland, embarked with 60 of his followers for England, and soon arrived at the port of Bristol, with a design to solicit assistance from king Henry.

In England, Dermot's character was unknown, and he was regarded as an injured prince driven from his throne by an iniquitous confederacy. The clergy received him as the benefactor of their order, and entertained him in the monastery of Augulines with great hospitality. Having learned that Henry was then in Aquitaine, he immediately went thither, and in a very abject manner implored his assistance, promising to acknowledge him as his liege lord, and to hold his dominions, which he was thus confident of regaining, in vassalage to Henry and his heirs.

Though nothing could be more flattering to the ambition of the king of England than this servile address, yet the situation of his own affairs rendered it impossible for him at that time to reap from it any of the advantages with which it flattered him. He therefore dismissed the Irish prince with large presents, and a letter of credence addressed to all his subjects; notifying his grace and protection granted to the king of Leinster; and declaring, that whosoever within his dominions should be disposed to aid the unfortunate prince in the recovery of his kingdom, might be assured of his free licence and royal favour.

Dermot returned to England highly pleased with the reception he had met with; but notwithstanding the king's letter, none of the English seemed to be disposed to try their fortunes in Ireland. A month elapsed without any prospect of succours, so that Dermot began to despair. At last, however, he persuaded, with great promises, Richard Earl of Chepstow, or, as it was formerly called, *Strigul*, a nobleman of considerable influence in Wales, but of broken fortune, to assist him with a considerable force to be transported next spring into Ireland. Overjoyed at this first instance of success, he advanced into South Wales, where, by the influence of the bishop of St David's, he procured many other friends. Robert Fitz-Stephen, a brave and experienced officer, covenanted with him to engage in his service with all his followers, and Maurice Fitz-Gerald his maternal brother; while Dermot, on his part, promised to cede to the two principal leaders, Fitz-Stephen and Fitz-Gerald, the entire dominion of the town of Wexford, with a large adjoining territory,

as soon as by their assistance he should be reinstated in his rights.

The Irish prince having now accomplished his purpose, set sail for Ireland in the winter of 1169, and recovered a small part of his dominions even before the arrival of his new allies; but being attacked with a superior force by his old enemies Roderic and O'Ruarc, he found himself obliged to feign submission till the English allies came to his assistance. The expected succours arrived in the month of May 1170, in a creek called the *Bann*, near the city of Wexford. Robert Fitz-Stephen commanded 30 knights, 60 men in armour, and 300 archers. With these came Harvey of Mountmorris, nephew to earl Richard. He had no military force along with him; but came solely with a view of discovering the nature of the country, and reporting it to his uncle. Maurice of Pendergast commanded 10 knights and 200 archers: and thus the English force which was to contend with the whole strength of Ireland, amounted to no more than 600 men.

Trifling as this assistance may seem, it nevertheless changed the face of affairs almost instantaneously. Numbers of Dermot's subjects, who had abandoned him in his distress, now flocked to his standard. Wexford was immediately attacked, and surrendered in a few days; Fitz-Stephen and Fitz-Gerald were jointly invested with the lordship of this city and its domain; and Harvey of Mountmorris was declared lord of two considerable districts on the coast. After three or four weeks spent in feasting and rejoicing, a new expedition was undertaken against the prince of Ossory (a district of Leinster), who had not only revolted from Dermot, but put out the eyes of one of his sons, and that with such cruelty, that the unhappy youth expired under the operation. The allied army was now increased to 3000 men, who were opposed by the prince of Ossory at the head of 5000, strongly entrenched among woods and morasses. By the superior conduct of the English troops, however, the Irish were decoyed from their advantageous situation, and thus were entirely defeated. The English were for keeping the field till they had totally reduced their enemies: but Dermot, accustomed only to ravage and plunder, contented himself with destroying the country; and a sudden reverse of fortune seemed ready to take place. The prince of Ossory, though defeated, still appeared in arms, and only waited for an opportunity of again opposing the enemy in the field. Maurice Pendergast also joined him with his whole troop, being provoked by Dermot, who had refused him leave to return to Wales. This defection, however, was in part supplied by the arrival of Fitz-Gerald with 10 knights, 30 horsemen, and 100 archers. Pendergast in a short time repented of his new alliance, and retired into Wales; so that the prince was obliged to make his submission to Dermot, which the latter with some reluctance accepted.

In the mean time, Roderick, having settled all his other affairs, advanced against the allies with a powerful army. Dermot was thrown into despair; but, encouraged by Fitz-Stephen, he encamped in a very strong situation, where he was soon besieged by Roderic. The latter, however, dreading the valour of the English, condescended to treat first with them, and then with Dermot, in order to detach them from the inter-

Ireland.

8
Dermot,
an exiled
prince, so-
licit assistance from
Henry II.

10
Their suc-
cess.

9
Persuades
some ad-
venturers
to follow
him to Ire-
land.

Ireland.

rests of each other: but as this proceeded evidently from fear, his offers were rejected by both parties; upon which he began to prepare for battle: but at the very time when the engagement should have commenced, either through the suggestions of his clergy, or of his own fears, Roderic entered into a new negotiation; which at last terminated in a peace. The terms were, that Dermot should acknowledge the supremacy of Roderic, and pay him such service as the monarchs of Ireland had usually received from inferior princes; and as a security for his faithful performance of this article, he delivered up his favourite son as an hostage to Roderic: but in order to establish this accommodation on the firmest basis, the latter obliged himself to give his daughter in marriage to the young prince as soon as Leinster should be reduced, and the peace of the island effectually restored. By a secret article, Dermot engaged to dismiss the British forces immediately after the settlement of his own province, and in the mean time not to bring over any further reinforcements from England.

11
Peace con-
cluded.

Thus ended the first British expedition into Ireland; the consequences of which were so little dreaded at that time by the natives, that their historians, though they dwell upon the principal wars and contests in other parts of the island, speak of the settlement of the Welshmen in Leinster with a careless indifference. But though the settlement of this colony seemed very little alarming to the generality, it could not escape the observation of discerning persons, that a man of Dermot's character would not long keep his treaties; and that on the first emergency he would have recourse to his former allies, who thus would establish themselves more and more, till at last they would reduce the country entirely under their subjection. These reflections, if any such were then made, were in a short time verified.

12
New ma-
chinations
of Dermot.

Dermot was scarce settled in his own dominions, when he began to aspire at the sovereignty, and form schemes for dethroning Roderic. He applied to Fitz-Stephen and Fitz-Gerald; by whom he was again directed to apply to Richard earl of Chepstow, more commonly known by the name of *Strongbow*, on account of his feats of archery. Richard was very much inclined to accept of his invitation; but thought it incumbent upon him first to obtain the consent of king Henry. The king, however, did not incline that his subjects should make conquests for themselves in any other country, and therefore dismissed Richard with an equivocal answer; but the latter being willing to understand his sovereign's words in the most favourable sense, immediately set about the necessary preparations for his expedition. In May 1171, Raymond le Gros, Richard's domestic friend, and the near relation of Fitz-Stephen and Fitz-Gerald, landed at a place called *Dundonally*, near Waterford, with 10 knights and 70 archers; and along with them came Harvey of Mountmorris, attended by a small train. The English immediately intrenched themselves, and erected a temporary fort for themselves: which proved a very necessary precaution; for the natives, justly attributing this new debarkation to the practices of Dermot, instantly formed a tumultuous army, and marched to expel the invaders. The English prepared to meet them; but when they perceived the great superiority of the enemy,

13
A new bo-
dy of Eng-
lish arrive
in Ireland.

they thought proper to retire to their fort. Here, however, they must have been totally cut off, had they not luckily collected a numerous herd of cattle from the neighbouring country for their subsistence. These they drove with fury among the Irish, who were thus put into the utmost confusion. The invaders seized the favourable moment; and, falling upon their disordered enemies, put them to flight, and drove great numbers of them into the sea, where they perished. Seventy prisoners were taken, all of them principal citizens of Waterford; who, though they offered large sums for their ransom, and even that the city should be delivered up to the English, were all barbarously put to death. This success and cruelty so intimidated the Irish, that they suffered these merciless invaders to maintain their station unmolested, and wait for the arrival of their associates.

Ireland.
14
Their suc-
cess and
cruelty.

Richard in the mean time having assembled his vassals, led them through Wales, where he was joined by great numbers of other adventurers; but, when just on the point of embarking, was surprised by a positive command from the king, to desist from his intended enterprise, on pain of forfeiture of his lands and honours. He was now, however, too much interested in his scheme to retract; and therefore pretended to disbelieve the authenticity of the royal mandate. On the eve of the feast of St Bartholomew, he landed at Waterford with 200 knights and 1200 infantry, all chosen and well appointed soldiers. They were immediately joined by Raymond and his troop; and the very next day it was resolved to make an attempt upon Waterford. The city was taken by storm, and a dreadful massacre ensued; to which the cruel Dermot had the merit of putting an end. The marriage of Richard with Eva, the daughter of Dermot, was solemnized without delay, and a scene of joy and festivity succeeded the calamities of war.

15
Earl Rich-
ard arrives
with a
powerful
reinforce-
ment.

A new expedition was now undertaken against Dublin; the inhabitants of which had either manifested some recent disaffection to Dermot, or had never been thoroughly forgiven for their old defection. Roderic advanced against the allied army with a formidable body, consisting, as is said, of 30,000 men; but, fearing to come to a general engagement, he contented himself with some slight skirmishes; after which, great part of his vassals forced him to dismiss them, and Dublin was left to its fate. The inhabitants were treated very severely; however, a considerable body of them, with Hesculph their governor, had the good fortune to gain some vessels lying in the harbour, and made their escape to the northern islands. Earl Richard was now invested with the lordship of Dublin; and appointed Milo de Cogan, a brave English knight, his governor; while he himself, in conjunction with the forces of Dermot, over-ran the country of Meath, committing every where the most horrid cruelties. Roderic, in the mean time, unable to oppose them in the field, sent deputies to Dermot, commanding him to retire, and putting him in mind that his son was in his hands, and must answer with his life for the breach of those treaties which his father made so little scruple to violate. Natural affection, however, had very little place in the breast of Dermot. He expressed the utmost indifference about his son; and, with

the

^{Ireland.} the greatest arrogance, claimed the sovereignty of all Ireland: Roderic, provoked at this answer, cut off the young prince's head.

This piece of impotent cruelty served only to make the king odious to his own subjects, while Dermot and his English allies committed every where the greatest devastations, and threatened to subdue the whole island. This indeed they would probably have accomplished, had not the extraordinary success of Strongbow alarmed king Henry; who, fearing that he might render himself totally independent on the crown of Britain, issued his royal edict, strictly forbidding any English vessel from passing into Ireland with men, arms, or provisions; and commanding all his subjects at that time resident in Ireland, of whatever rank or degree, to return to their country before the ensuing feast of Esther, on pain of forfeiting their lands, and being declared traitors.

¹⁶
All the ad-
venturers
recalled by
the king.

Our adventurers were plunged into the greatest distress by this peremptory edict. They now found themselves cut off from all supplies in the midst of their enraged enemies, and in danger of being forsaken by those who had attached themselves to them during their success. Raymond was dispatched with a most submissive message to the offended monarch; but before he received any favourable answer, every thing was thrown into confusion by the death of Becket*, so that the king had neither leisure nor inclination to attend to the affairs of Ireland. About the same time the death of Dermot their great ally seemed almost to give a finishing stroke to the English affairs. An universal defection took place among their associates; and before they had time to concert any proper measures, Hefculph, who had formerly escaped from Dublin, appeared before that city with a formidable body of troops armed after the Danish manner. A furious attack ensued; which at last ended in the defeat and captivity of Hefculph, who was immediately put to death. This danger, however, was soon followed by one still greater. Roderic had formed a powerful confederacy with many of the Irish chieftains, and the kings of the northern isles, in order to extirpate the English totally from the island. The harbour of Dublin was blocked up by a fleet of 30 ships from the northern isles; while the confederated Irish took their stations in such a manner as to surround the city, and totally cut off all supplies of provisions. In two months time the English were reduced to great straits. On the first alarm, Richard had sent for assistance to Fitz-Stephen; who having weakened his own force, in order to serve the earl, the people of Wexford had risen and besieged Fitz-Stephen in his fort called *Carrig* near that city. A messenger now arrived, informing Strongbow that his friend was in the utmost danger, and must fall into the hands of his enemies if not assisted within three days; upon which a council of war was called, in order to deliberate on the measures necessary to be pursued in this desperate emergency. It was soon resolved to enter into a treaty with Roderic upon any terms that were not totally servile or oppressive. Laurence prelate of Dublin was appointed to carry the terms; which were, that Richard proposed to acknowledge Roderic as his sovereign, and to hold the province of Leinster as his vassal, provided he would raise the siege. Laurence soon returned with an

* See Eng-
land, n^o 119,
120.

¹⁷
Distress of
the English

answer, probably of his own framing; namely, that Dublin, Waterford, Wexford, and all the forts possessed by the British, should be immediately given up; and that the earl and his associates should depart with all their forces by a certain day, leaving every part of the island free from their usurpations, and absolutely renouncing all their pretended claims. On these conditions they were to be spared; but the least reluctance or delay would determine the besiegers to storm the city.

These terms, though they contained nothing insolent or unreasonable, considering the present situation of the English, were yet intolerable to our indigent adventurers. After some time spent in silence, Milo de Cogan, suddenly starting up, declared his resolution to die bravely rather than submit to the mercy of barbarians. The spirit of desperate valour was instantly caught by the whole assembly; and it was resolved to risk their whole fortune on one desperate effort, by falling out against the enemy, and to make their attack upon that quarter where Roderic himself commanded. Accordingly, having persuaded a body of the townsmen to take part in this desperate enterprise, they marched out against their enemies, who expected nothing less than such a sudden attack. The besiegers were secure and careless, without discipline or order; in consequence of which, they were unable to sustain the furious assault of the English. A terrible slaughter ensued, and the Irish instantly fled in the greatest confusion; their monarch himself escaping only by mixing half naked with the crowd. The other chieftains who were not attacked caught the panic, and broke up their camps with precipitation; while the victors returned from the pursuit to plunder, and among other advantages gained as much provision as was sufficient to support them for a whole year.

^{Ireland.}

¹⁸
They total-
ly defeat
their ene-
mies.

Strongbow being thus relieved from his distress, committed the government of Dublin to Milo de Cogan, while he proceeded immediately to Wexford in order to relieve Fitz-Stephen: but in this he was disappointed; for that brave officer, having often repulsed his enemies, was at last treacherously deceived into submission and laid in irons. Strongbow, however, continued to advance; and was again attacked by the Irish, whom he once more defeated. On his arrival at Wexford, he found it burnt to the ground; the enemy having retired with Fitz-Stephen and the rest of the prisoners to Holy Island, a small island in the middle of the harbour, from whence they sent a deputation, threatening to put all the prisoners to death if the least attempt was made to molest them in their present situation. The earl then proceeded to Waterford, and from thence to Ferns; where he for some time exercised a regal authority, rewarding his friends and punishing his enemies. A more important object, however, soon engaged his attention. The king of England having settled his affairs as well as he could, now determined to conquer Ireland for himself. A summons was instantly dispatched to earl Richard, expressing the greatest resentment at his presumption and disobedience, and requiring his immediate presence in England. The earl found himself under a necessity of obeying; and having made the best dispositions the time would permit for the security of his Irish possessions, embarked for England, and met the king at Newnham near Gloucester

¹⁹
Earl Rich-
ard sum-
moned to
England.

Ireland.

Ireland.

cesser. Henry at first affected great displeasure; but soon allowed himself to be pacified by a surrender of the city of Dublin, and a large territory adjacent, together with all the maritime towns and forts acquired by Strongbow: while on his part he consented that the earl should have all his other possessions granted in perpetuity, to be held of the king and his heirs. The other adventurers made their peace in a similar manner; while the Irish chieftains, instead of uniting in the defence of their country, only thought how to make the most of the approaching invasion, or at least how to avert the threatened evils from their own particular districts. They saw the power of their own sovereign on the point of total dissolution; and they saw it with indifference, if not with an envious and malignant satisfaction. Some were even ready to prevent their invader, and to submit before he appeared on the coast. The men of Wexford, who had possessed themselves of Fitz-Stephen, resolved to avert the consequences of their late perfidy and cruelty, by the forwardness of their zeal for the service of the king of England, and the readiness of their submissions. Their deputies cast themselves at Henry's feet; and, with the most passionate expressions of obedience, humbly intreated that he would accept them as his faithful vassals, ready to resign themselves, their lands, and possessions, to his absolute disposal. "They had already (they said) endeavoured to approve their zeal by seizing Robert Fitz-Stephen, a traitor to his sovereign, who had lately entered their territory by force of arms without any due warrant or fair pretence, had slaughtered their people, seized their lands, and attempted to establish himself independent of his liege lord. They kept him in chains, and were ready to deliver him to the disposal of his sovereign."—The king received them with expressions of the utmost grace and favour; commended their zeal in repressing the unwarrantable attempts of Fitz-Stephen; declared that he should soon inquire into his crimes, and the wrongs they had sustained, and inflict condign punishment for every offence committed by his undutiful subjects.—Thus were the Irishmen dismissed in the utmost joy and exultation; and the artifice of Henry, while it inspired these men with dispositions favourable to his interests, proved also the most effectual means of saving Fitz-Stephen from their cruelty.

Henry, having completed the preparations necessary for his expedition, embarked at Milford with several of his barons, 400 knights, and about 4000 soldiers, on board a fleet of 240 sail. He landed at Waterford on the feast of St Luke in October 1172; with a professed design not to conquer, but to take possession of a kingdom already his own, as being granted him by the pope. Most of the Irish indeed seemed to be of the same opinion, and therefore submitted without the least resistance. Strongbow set them an example, by making a formal surrender of Waterford, and doing homage to the king for the territory of Leinster. Fitz-Stephen was delivered up, with many accusations of tyranny and injustice. He was at first sent to prison; but soon purchased his liberty, by surrendering Wexford, and doing homage for the rest of his possessions to the king. The prince of Desmond was the first Irish chieftain who submitted. On the very day after the king's arrival, he attended his court, resigned

N^o 168.

the city of Corke, did him homage, and stipulated to pay a tribute for the rest of his territory. An English governor and garrison were immediately appointed to take possession of his capital; and the king displayed his power and magnificence by marching to Lismore, where he chose a situation and gave the necessary orders for building a fort. The prince of Thomond next submitted and did homage. He was followed by the princes of Ossory, Decies, and all the inferior chiefs of Munster.

The king, after having provided for the security of all his newly acquired territories, and put garrisons in the cities of Limerick, Corke, Waterford, and Wexford, proceeded to take possession of Dublin, which had been surrendered by Strongbow. The neighbouring lords took the opportunity of submitting as he advanced. O'Carrol of Argial, a chieftain of great consequence, repaired to his camp, and engaged to become his tributary; and even O'Ruarc, whom Roderic had made lord of a considerable part of Meath, voluntarily submitted to the new sovereign.

Roderic, though surprised at the defection of so many of his allies, still determined to maintain his own dignity, and at least preserve his province of Connaught, seeing he could no longer call himself monarch of the whole island. With this design he entrenched himself on the banks of the Shannon; and now, when disencumbered from a crowd of faithless and discontented followers, he appears to have acted with a spirit and dignity becoming his station. Hugh de Lacy and William Fitz-Andelm were commissioned by the king to reduce him: but Roderic was too strong to be attacked with any probability of success by a detachment from the English army; and he at least affected to believe, that his situation was not yet so totally desperate as to reduce him to the necessity of resigning his dignity and authority, while his own territory remained inviolate, and the brave and powerful chiefs of Ulster still kept retired in their own districts without any thoughts of submission. Henry in the mean time attempted to attach the Irish lords to his interest by elegant and magnificent entertainments, such as to them appeared quite astonishing. Some historians pretend that he established the English laws in all those parts which had submitted to his jurisdiction; but this must appear extremely improbable, when we consider how tenacious a rude and barbarous people are of their ancient laws and customs. The Irish lords had been accustomed to do homage to a superior; and they had made no submission to Henry which they had not formerly done to Roderic, and probably thought their submission to the king of England more honourable than that to their Irish monarchs; and it cannot be supposed, that a wise and politic monarch, such as Henry undoubtedly was, should form at once such an extravagant scheme as altering the laws of a great number of communities, none of which he had subdued by force of arms. By his transactions both with the natives and adventurers, however, Henry had attained the absolute dominion of several maritime cities and their dependencies; so that he had both a considerable number of real subjects, and a large extent of territory, in the island. To these subjects indeed Henry granted the English laws; and gave the city of Dublin by charter to the inhabitants of Bristol, to be held of

him

30
King Henry
lands in
Ireland.

31
Many Irish
chieftains
submit to
him.

22
Roderic
still holds
out.

Ireland.

him and his heirs, with the same liberties and free customs which they enjoyed at Bristol, and throughout all his land. And, by another charter, executed soon after, he confirmed to his burgesses of Dublin all manner of rights and immunities throughout his whole land of England, Normandy, Wales, and Ireland, wherever they and their effects shall be, to be fully and honourably enjoyed by them as his free and faithful subjects. And as it was not easy to induce his English subjects immediately to settle in these maritime towns, he permitted the Oskmen to take possession of Waterford; and to them he granted a particular right of denization, whereby they were invested with the rights and privileges of free subjects, and for the future to be governed by the laws of his realm. For the better execution of these new laws, the king also made a division of the districts now subject to him into shires or counties; which was afterwards improved and enlarged, as the extension of the English settlements and the circumstances of the country required. Sheriffs were appointed both for the counties and cities, with itinerant judges, and other ministers of justice, and officers of state, and every appendage of English government and law. To complete the whole system, a chief governor, or representative of the king, was appointed. His business was to exercise the royal authority, or such parts of it as might be committed to him in the king's absence; and, as the present state of Ireland, and the apprehensions of war or insurrections, made it necessary to guard against sudden accidents, it was provided, That in case of the death of any chief governor, the chancellor, treasurer, chief justice, and chief baron, keeper of the rolls, and king's serjeant at law, should be empowered, with consent of the nobles of the land, to elect a successor, who was to exercise the full power and authority of this office, until the royal pleasure should be further known.

23
Henry obliged to leave Ireland.

But while Henry was thus regulating the government of his new dominions, he received the unwelcome news, that two cardinals, Albert and Theodine, delegated by the pope, had arrived in Normandy the year before, to make inquisition into the death of Becket; that having waited the king's arrival until their patience was exhausted, they now summoned him to appear without delay, as he would avert the dreadful sentence of excommunication, and preserve his dominions from a general interdict. Such denunciations were of too great consequence to admit of his longer stay in Ireland; he therefore ordered his forces and the officers of his household to embark without delay, reserving three ships for the conveyance of himself and his immediate attendants. Having therefore but a short time to secure his Irish interests, he addressed himself to the original English adventurers, and by grants and promises laboured to detach them from Strongbow, and to bind them firmly to himself. To make amends for what he had taken from Fitz-Stephen, he granted him a considerable district in the neighbourhood of Dublin, to be held by knight's service; at the same time entrusting the maritime towns to his own immediate dependants. Waterford was committed to Humphrey de Bohun, Robert Fitz-Bernard, and Hugh de Gundville, with a train of 20 knights. In Wexford were stationed William Fitz-Andelm,

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Philip of Hastings, and Philip de Braosa, with a like number of attendants. Hugh de Lacy had a grant of all the territory of Meath, where there was no fortified place, and where of consequence no particular reservation was necessary, to be held of the king and his heirs, by the service of 50 knights, in as full a manner as it had been enjoyed by any of the Irish princes. He also constituted him lord governor of Dublin, with a guard of 20 knights. Robert Fitz-Stephen and Maurice Fitz-Gerald were appointed his coadjutors, with an equal train; and these, with others of the first adventurers, were thus obliged, under the pretence of an honourable employment, to reside at Dublin, subject to the immediate inspection of de Lacy, in whom Henry seems to have placed his chief confidence. Lands were assigned in the neighbourhood of each city for the maintenance of the knights and soldiers. Orders were given to build a castle in Dublin, and fortresses in other convenient places; and to John de Courcey, a baron distinguished by his enterprising genius and abilities for war, was granted the whole province of Ulster, provided he could reduce it by force of arms.

Henry was no sooner gone, than his barons began to contrive how they might best strengthen their own interests, and the Irish how they might best shake off the yoke to which they had so readily submitted. De Lacy parcelled out the lands of Meath to his friends and adherents, and began to erect forts to keep the old inhabitants in awe. This gave offence to O'Ruarc, who still enjoyed the eastern part of this territory as a tributary prince. He repaired to Dublin, in order to obtain redress from Lacy for some injuries real or pretended; but, as the parties could not come to an agreement, another conference was appointed on a hill called *Taragh*. Both parties came with a considerable train of armed followers; and the event was a scuffle, in which O'Ruarc and several of his followers were killed, and which served to render the English not a little odious to the natives.

The spirit of disaffection had soon after an opportunity of showing itself on the rebellion of king Henry's sons, of which an account is given under the article ENGLAND, n° 121. & seq. The king had been obliged to weaken his forces in Ireland, by withdrawing several of his garrisons. The soldiers who remained were also discontented with their general Hervey of Mountmorris, on account of his severity in discipline, and restraining them from plunder, to which they imagined themselves intitled on account of the deficiencies of their pay. Raymond le Gros, the second in command, was much more beloved by the soldiery: and to such a height had the jealousies between the commanders arisen, that all effectual opposition to the Irish chieftains was prevented; and the event might have been fatal to the English interest, had not Henry found out a remedy. He summoned earl Richard to attend him at Rouen in Normandy, and communicated his intentions of committing the affairs of Ireland to his sole direction. The earl expressed the utmost readiness to serve his master; but observed, that he had already experienced the envy and malignity of his secret enemies; that if he should appear in such a distinguished character as that of the king's deputy in Ireland, their insidious practices

S f

Ireland.

24
Disorders the king's departures

25
Strongbow the first governor of Ireland.

Ireland.

would be renewed, and his conduct misrepresented. He therefore requested that a colleague might be appointed in the commission; and recommended Raymond as a person of approved loyalty and abilities, as well as highly acceptable to the soldiery. The king replied, with an affected air of regard and confidence, that he had his free consent to employ Raymond in any service he should deem necessary, not as a colleague, but as an assistant; but that he relied entirely on the earl himself, and implicitly trusted every thing to his direction. To reward his services, he granted him the town of Wexford, together with a fort erected at Wicklow; and then dismissed him with the most gracious expressions of favour.

The earl landed at Dublin, where he was received with all the respect due to the royal commission. He signified the king's pleasure, that Robert Fitz-Bernard, with the garrison of Waterford, should instantly embark and repair to Normandy; that Robert Fitz-Stephen, and Maurice Pendergast, should attend the service of their sovereign in England; and, agreeably to the king's instructions, took on him the custody of the cities of Dublin, Waterford, and Wexford. Hugh de Lacy, and Milo de Cogan, were, with the other lords, commanded to repair to England for the service of the king; by which the earl's forces were considerably weakened, and he soon found himself under a necessity of appointing Raymond to the chief command. The new general proved successful in some enterprizes against the rebellious Irish; but having presumed upon his merits to demand in marriage Basilia the earl's sister, Richard refused his consent, and Raymond retired into Wales.

Thus the supreme command again devolved upon Hervey of Mountmorris; who, being sensible that his character had suffered much from a comparison with that of Raymond, determined to emulate his successes by some bold attempt against the rebels. A detachment of 400 of his men, however, had the misfortune to be surprized and cut off by the enemy; and this success served as a signal for a general revolt. Several of the Leinster chieftains, who had lately made their submissions, and bound themselves to the service of king Henry, now openly disclaimed all engagements. Even Donald Kevanagh, son to the late king Dermot, who had hitherto adhered to the English in their greatest difficulties, now declared against them, and claimed a right to the kingdom of Leinster; while Roderic, on his part, was active in uniting the princes of Ulster, the native lords of Meath, and other chiefs, against their common enemy. This produced the immediate recal of Raymond; and Richard no longer refused his consent to the marriage with his sister, which was solemnized immediately on Raymond's arrival. The very next morning, the bridegroom was obliged to take the field against Roderic, who had committed great devastations in Meath. By the vigorous conduct of the English commander, however, he was not only prevented from doing farther mischief, but at last convinced of the folly of resistance; and therefore determined to make a final submission. Yet, conscious of his dignity, he disdained to submit to a subject; and therefore, instead of treating with earl Richard, he sent deputies directly to the king. The deputies were, Catholicus archbishop of Tuam, the

abbot of St Brandon, and *Master-Lawrence*, as he is styled, chancellor to the king of Connaught.

The terms of this submission, by which Henry became sole monarch of Ireland, were as follow: Roderic consented to do homage and pay tribute, as liege-man to the king of England; on which condition he was allowed to hold the kingdom of Connaught, as well as his other lands and sovereignties, in as ample a manner as he had enjoyed them before the arrival of Henry in Ireland. His vassals were to hold under him in peace, as long as they paid their tribute and continued faithful to the king of England; in which Roderic was to enforce their due obedience, and for this purpose to call to his assistance the English government, if necessary. The annual tribute to be paid was every 10th merchantable hide, as well from Connaught as from the rest of the island; excepting those parts under the immediate dominion of the king of England and his barons, viz. Dublin and Meath with their appurtenances, Wexford and all Leinster, and Waterford with its lands as far as Dungarvan inclusive; in all which districts Roderic was not to interfere, nor claim any power or authority. The Irish who had fled from these districts were to return, and either pay their tribute, or perform the services required by their tenures, at the option of their immediate lords; and, if refractory, Roderic, at the requisition of their lords, was to compel them to return. He was to take hostages from his vassals, such as he and his liege-lord should think proper; and on his part to deliver either these or others to the king, according to the royal pleasure. His vassals were to furnish hawks and hounds annually to the English monarch; and were not to detain any tenant of his immediate demesnes in Ireland, contrary to his royal pleasure and command. This treaty was solemnly ratified in a grand council of prelates and temporal barons, among whom we find the archbishop of Dublin one of the subscribing witnesses. As metropolitan of Leinster, he was now become an English subject, and was probably summoned on this occasion as one obliged to attend, and who had a right to assist in the king's great council. It is also observable, that Henry now treated with Roderic not merely as a provincial prince, but as monarch of Ireland. This is evidently implied and supposed in the articles; although his monarchical powers and privileges were little more than nominal, frequently disregarded and opposed by the Irish toparchs. Even by their submissions to Henry, many of them in effect disavowed and renounced the sovereignty of Roderic; but now his supremacy seems to be industriously acknowledged, that the present submission might appear virtually the submission of all the subordinate princes, and thus the king of England be invested with the sovereignty of the whole island. The marks of sovereignty, however, were no more than homage and tribute: in every other particular, the regal rights of Roderic were left inviolate. The English laws were only to be enforced in the English pale: and, even there, the Irish tenant might live in peace, as the subject of the Irish monarch; bound only to pay his quota of tribute, and not to take arms against the king of England.

But though the whole island of Ireland thus became subject to the king of England, it was far from being;

28
Terms of
his submission.

26
A general
revolt of
the Irish.

27
Roderic
submits
to king
Henry.

Ireland.
29
Causes of
the subse-
quent dis-
tresses of
Ireland.

being settled in tranquillity, or indeed from having the situation of its inhabitants mended almost in any degree. One great occasion of disturbance was, that the English laws were confined only to those parts which had been subdued by force of arms; while the chieftains that had only submitted to pay tribute, were allowed to retain the ancient Irish laws within the limits of their own jurisdictions. By these old Irish laws, many crimes accounted capital with us, such as robbery, murder, &c. might be compensated by a sum of money. Hence it happened, that very unequal punishments were inflicted for the same offence. If one Englishman killed another, he was punished with death; but if he killed an Irishman, he was punished only by a fine. If an Irishman, on the other hand, killed an Englishman, he was certainly punished with death: and as in times of violence and outrage, the crime of murder was very frequent, the circumstance just mentioned tended to produce an implacable hatred between the original inhabitants and the English. As the Irish laws were thus more favourable to the barbarity natural to the tempers of some individuals, many of the English were also tempted to lay aside the manners and customs of their countrymen altogether, and to associate themselves with the Irish, that, by becoming subject to their laws, they might thus have an opportunity of gratifying their brutal inclinations with less controul than formerly; and in process of time, these *degenerate English*, as they were called, proved more bitter enemies to their countrymen than even the Irish themselves.

Another cause of the distresses of Ireland was, the great power of the English barons, among whom Henry had divided the greatest part of his Irish dominions. The extent of their authority only inflamed them with a desire for more; and, instead of contributing their endeavours to increase the power of their sovereign, or to civilize the barbarous people over whom they were placed, they did every thing in their power to counteract and destroy each other. Henry himself, indeed, seems to have been infected with a very fatal jealousy in this respect; for, though the abilities and fidelity of Raymond had abundantly manifested themselves, the king never could allow himself to continue him in the government of the island: and the consequence of degrading him never failed to be a scene of uproar and confusion. To these two reasons we must likewise add another; namely, that in those parts of the kingdom where the Irish chieftains enjoyed the sovereignty, they were at full liberty to make war upon each other as formerly, without the least restraint. This likewise induced many of the English to degenerate, that they might have an opportunity of sharing the plunder got by these petty wars; so that, on the whole, the island was a perpetual scene of horror, almost unequalled in the history of any country.

After the death of earl Richard, Raymond was immediately elected to succeed him; but was superseded by the king, who appointed William Fitz-Andelm, a nobleman allied to Raymond, to succeed in his place. The new governor had neither inclination nor abilities to perform the task assigned to him. He was of a rapacious temper, sensual and corrupt in his manners; and therefore only studied to enrich himself. The

native Irish, provoked by some depredations of the English, commenced hostilities; but Fitz-Andelm, instead of repressing these with vigour in the beginning, treated the chieftains with affected courtesy and flattery. This they had sufficient discernment to see, and to despise; while the original adventurers had the burden of the whole defence of the *English pale*, as the English territories were called, thrown upon them, at the same time that the bad conduct of the governor was the cause of perpetual disorders. The consequence of this was, that the lords avowed their hatred of Fitz-Andelm: the soldiers were mutinous, ill-appointed, and unpaid: and the Irish came in crowds to the governor with perpetual complaints against the old adventurers, which were always decided against the latter; and this decision increased their confidence, without lessening their disaffection.

In this unfavourable state of affairs, John de Courcay, a bold adventurer, who had as yet reaped none of the benefits he expected, resolved to undertake an expedition against the natives, in order to enrich himself with their spoils. The Irish at that time were giving no offence; and therefore pleaded the treaty lately concluded with King Henry: but treaties were of little avail, when put in competition with the necessities of an indigent and rapacious adventurer. The consequence was, that the flame of war was kindled through the whole island. The chieftains took advantage of the war with the English, to commence hostilities against each other. Desmond and Thomond, in the southern province, were distracted by the jealousies of contending chiefs, and the whole land was wasted by unnatural and bloody quarrels. Treachery and murder were revenged by practices of the same kind, in such a manner as to perpetuate a succession of outrages the most horrid, and the most disgraceful to humanity. The northern province was a scene of the like enormities; though the new English settlers, who were considered as a common enemy, ought to have united the natives among themselves. All were equally strangers to the virtues of humanity; nor was religion, in the form it then assumed, capable of restraining these violences in the least.

Ireland was thus in a short time reduced to such a state, that Henry perceived the necessity of recalling ³¹ Fitz-Andelm, and appointing another governor. He ^{He is superseded by} Hugh de Lacey ^{Lacey.} was recalled accordingly; and Hugh de Lacey appointed to succeed him. He left his government without being regretted, and is said by the historians of those times to have done only one good action during the whole course of his administration. This action was nothing more important, than the removing of a relic, called the *staff of Jesus*, from the cathedral of Armagh to that of Dublin; probably that it might be in greater safety, as the war raged violently in Ulster. De Lacey, however, was a man of a quite different disposition, and every way qualified for the difficult government with which he was invested: but at the same time, the king, by investing his son John with the lordship of Ireland, gave occasion to greater disturbances than even those which had already happened. The nature of this lordship hath been much disputed; but the most probable opinion is, that the king's son was now to be invested with all the rights and powers which had formerly belonged to Roderic, ³² Prince John made lord of Ireland. who

30
Fitz-Andelm's bad government.

Ireland. who was allowed the title of *king of Ireland*. It doth not appear, indeed, that Henry had any right to deprive Roderic of these powers, and still less had he to dispose of any of the territories of those chieftains who had agreed to become his tributaries; which nevertheless he certainly did, and which failed not to be productive of an immediate war with these chiefs.

The new governor entered on his office with all that spirit and vigour which was necessary; but being misrepresented to the king by some factious barons, he was in a short time recalled, and two others, totally unfit for the government, appointed in his room. This error was soon corrected, and Lacey was replaced in three months. The same jealousy which produced his first degradation, soon produced a second; and Philip de Braosa, or *Philip of Worcester*, as he is called, a man of a most avaritious disposition, was appointed to succeed him. This governor behaved in such a manner, that his superstitious subjects expected every moment that the vengeance of heaven would fall upon him, and deliver them from his tyranny. His power, however, was of short duration; for now prince John prepared to exercise the authority with which his father had invested him in Ireland. He was attended by a considerable military force: his train was formed of a company of gallant Normans in the pride of youth; but luxurious, insolent, and followed by a number of Englishmen, strangers to the country they were to visit, desperate in their fortunes, accustomed to a life of profligacy, and filled with great expectations of advantage from their present service. The whole assembly embarked in a fleet of 60 ships; and arrived at Waterford after a prosperous voyage, filling the whole country with the greatest surprise and expectation.

33
His indif-
ference.

The young prince had not yet arrived at the years of discretion; nor indeed, from his subsequent conduct, doth it appear that his disposition was such as qualified him in the least for the high dignity to which he was raised. The hardy Welchmen who first migrated into Ireland, immediately waited upon him to do him homage; but they were disagreeable to the gay courtiers, and to the prince himself, who minded nothing but his pleasures. The Irish lords were at first terrified by the magnificent representation of the force of the English army; and being reconciled to submission by the dignity of the prince's station, hastened in crowds to Waterford to do him homage. They exhibited a spectacle to the Norman courtiers, which the latter did not fail to treat with contempt and ridicule. The Irish lords, with uncouth attire, thick bushy beards, and hair standing on end, advanced with very little ceremony; and, according to their own notions of respect, offered to kiss the young prince. His attendants stepped in, and prevented this horrid violation of decorum by thrusting away the Irishmen. The whole assembly burst into peals of laughter, pulled the beards, and committed several other indignities on the persons of their guests; which were immediately and severely repressed. The chieftains left the court, boiling with indignation; and meeting others of their countrymen hastening to do homage to the prince, they informed them of the reception they themselves had met with. A league was instantly formed to extirpate the English; and the whole nation flew to arms; while John and his court-

34
A general
revolt.

iers, instead of opposing the enemy, employed themselves in harassing and oppressing those who were under their immediate jurisdiction. The country was therefore over-run by the barbarians, agriculture entirely neglected, and a dreadful famine threatened to follow the calamities of war.

This terrible devastation had continued for eight months before the king was fully acquainted with it. He then determined to recal his son; but was at a loss whom he should name for his successor. Lacey had been murdered by an Irish peasant, and the king was at last obliged to have recourse to John de Courcey, whose boisterous valour seemed now to be absolutely necessary to prevent the English from being totally exterminated. The new governor was obliged at first to act on the defensive; but as his enemies soon forgot their league, and began their usual hostilities against each other, he was at last enabled to maintain the authority of the English government, and to support their acquisitions in Ireland, though not to extend them.

35
Suppressed
by John de
Courcey.

In this situation were the affairs of Ireland when Henry II. died, and was succeeded by his son Richard I. The new king was determined on an expedition to the holy land, which left him no leisure to attend to the affairs of Ireland. John, by virtue of the powers granted him by his father, took upon him the management of Irish affairs; and immediately degraded de Courcey from his government, appointing in his place Hugh de Lacey the younger. De Courcey, provoked at this indignity, retired into Ulster, where he was immediately engaged in a furious war with the natives, and at last almost entirely detached himself from the English government. The greatest confusion ensued; Hugh de Lacey was recalled from his government, and William Petit, earl marshal of England, appointed in his place. Petit's administration proved more unfortunate than that of any of his predecessors. Confederacies every where took place against the English; the latter were every where defeated, their towns taken; and their power would certainly have been annihilated, had not the Irish, as usual, turned their arms against each other.

In this desperate situation matters continued during the whole reign of king Richard, and part of the reign of John, while the distresses of the country were increased by the dissensions and disaffection of the English lords, who aspired at independency, and made war upon each other like Irish chieftains. The prudent conduct of a governor named *Meiler Fitz-Henry*, however, at last put an end to these terrible commotions; and about the year 1208, the kingdom was more quiet than it had been for a long time before. In 1210, John came over to Ireland in person with an army, with a design, as he said, to reduce his refractory nobles to a sense of their duty. More than 20 Irish chiefs waited upon him immediately to do him homage; while three of the English barons, Hugh and Walter de Lacey and William de Braosa fled to France. The king, at the desire of his Irish subjects, granted them, for their information, a regular code and charter of laws, to be deposited in the exchequer of Dublin, under the king's seal. For the regular and effectual execution of these laws, besides the establishment of the king's courts of judicature in Dublin, there was

36
Miserable
state of Ire-
land under
Richard I.

37
Some what
better un-
der John

now

^{Ireland.} now made a new and more ample division of the king's lands of Ireland into counties, where sheriffs, and many other officers, were appointed. These counties were, Dublin, Meath, Kildare, Arghal, now called *Louth*, Katherlagh, Kilkenny, Wexford, Waterford, Cork, Kerry, Limerick, Tipperary; which marks the extent of the English dominions at this time as confined to a part of Leinster and Munster, and to those parts of Meath and Arghal which lie in the province of Ulster, as now defined. Before his departure, the king gave liberty to John de Grey, bishop of Norwich, whom he appointed governor, to coin money of the same weight with that of England; and which, by royal proclamation, was made current in England as well as Ireland.

³⁸ ^{Relapses into its former state under Henry III.} This ecclesiastical governor is said to have managed affairs so happily, that during the violent contests between John and his barons, Ireland enjoyed an unusual degree of tranquillity. We are not to imagine, however, that this unhappy country was at this or indeed any other period, till the end of Queen Elizabeth's reign, perfectly free from disorders, only they were confined to those districts most remote from the English government. In 1219, the commotions were renewed, thro' the immeasurable ambition and contentions of the English barons, who despised all controul, and oppressed the inhabitants in a terrible manner. The disorders in England during the reign of Henry III. encouraged them to despise the royal authority; they were ever the secret enemies, and sometimes the avowed adversaries, of each other; and in many places where they had obtained settlements, the natives were first driven into insurrections by their cruelty, and then punished with double cruelty for their resistance. The English laws, which tended to punish the authors of these outrages, were scorned by an imperious aristocratic faction, who, in the phrenzy of rapine and ambition, trampled on the most salutary institutions. In 1228, a remonstrance was presented to the king against this dangerous neglect and suspension of the laws; which he answered by a mandate to the chief governor, directing that the whole body of nobility, knights, free tenants, and bailiffs of the several counties, should be convened; that the charter of English laws and customs received from king John, and to which they were bound by oath, should be read over in their presence; that they should be directed for the future strictly to observe and adhere to these; and that proclamation should be made in every county of Ireland, strictly enjoining obedience, on pain of forfeiture of lands and tenements. How little effect was produced by this order, we may learn from another, dated in 1246; where the barons are commanded, for the peace and tranquillity of the land, to permit it to be governed by the laws of England.

³⁹ ^{Excessive depravation of manners.} Nothing indeed can be conceived more terrible than the state of Ireland during the reign of Henry III. People of all ranks appear to have been sunk in the lowest degree of depravity. The powerful English lords not only subverted the peace and security of the people, by refusing to admit the salutary laws of their own country, but behaved with the utmost injustice and violence to the natives who did not enjoy the benefits of the English constitution. The clergy appear to have been equally abandoned with the rest: nor in-

^{Ireland.} deed could it be otherwise; for through the partialities of Henry himself, the neglected, the worthless, and the depressed among the English clergy, found refuge in the church of Ireland. What were the manners of these clergy, will appear from the following petition of a widow to king Edward I.

"Margaret le Blunde, of Cashel, petitions our lord the king's grace, that she may have her inheritance which she recovered at Clonmell before the king's judges, &c. against David Macmackerwayt bishop of Cashel.

"*Item*, the said Margaret petitions redress on account that her father was killed by the said bishop.

"*Item*, for the imprisonment of her grandfather and mother, whom he shut up and detained in prison until they perished by famine, because they attempted to seek redress for the death of their son, father of your petitioner, who had been killed by the said bishop.

"*Item*, for the death of her six brothers and sisters, who were starved to death by the said bishop, because he had their inheritance in his hands at the time he killed their father.

"And it is to be noted, that the said bishop had built an abbey in the city of Cashel, on the king's lands granted for this purpose, which he hath filled with robbers, who murder the English, and depopulate the country; and that when the council of our lord the king attempts to take cognizance of the offence, he fulminates the sentence of excommunication against them.

"It is to be noted also, that the said Margaret has five times crossed the Irish sea. Wherefore, the petitions for God's sake, that the king's grace will have compassion, and that she may be admitted to take possession of her inheritance.

"It is further to be noted, that the aforesaid bishop hath been guilty of the death of many other Englishmen besides that of her father; and that the aforesaid Margaret hath many times obtained writs of our lord the king, but to no effect, by reason of the influence and bribery of the said bishop.

"She further petitions, for God's sake, that she may have costs and damages, &c."

⁴⁰ ^{Little alteration under Edward I.} Matters continued in the same deplorable state during the reign of Edward I. with this additional grievance, that the kingdom was infested by invasions of the Scots. The English monarch indeed possessed all that prudence and valour which were necessary to have reduced the island to a state of tranquillity; but his project of conquering Scotland left him but little leisure to attend to the distracted state of Ireland. Certain it is, however, that the grievous distress of that country gave him great uneasiness; so that he transmitted his mandate to the prelates of Ireland, requiring them to interpose their spiritual authority for composing the public disorders. About the same time, the Irish lay contiguous to the English, and who dwelt among them, presented a petition to the king, offering to pay him 8000 merks, upon condition that they were admitted to the privileges of English subjects. To this petition he returned a favourable answer; but his good intentions were defeated by the licentious nobility, who knew that these laws would have circumscribed their rapacious views, and controuled their

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violence and oppression. Petitions of the same kind were several times repeated during this reign, but as often defeated; though some means were used for the peace of the kingdom, such as the frequent calling of parliaments, appointing sheriffs in some new counties, &c.

41
Invasion of
the Scots
in the
reign of
Edward II.

These means were not altogether without effect. They served to give some check to the disorders of the realm, though by no means to terminate or subdue them. The incursions of the natives were repressed, and the English lords began to live on better terms with each other; and, in 1311, under Edward II. the most powerful of them were reconciled by the marriage of Maurice and Thomas Fitz-John, afterwards the heads of the illustrious houses of Desmond and Kildare, to two daughters of the earl of Ulster. But just at this happy period, when the nation seemed to have some prospect of tranquillity, more dreadful calamities than any hitherto related were about to take place. The Scots had just recovered their liberty under Robert Bruce, and were now in no danger of being again enslaved by a foreign power. Edward, the king's brother, as a recompence for his services, demanded a share of the royal authority. This was refused by Robert, and Edward was for the present satisfied by being declared heir apparent to the crown. But the king, wisely considering the necessity of finding out some employment for a youth of such an aspiring and ambitious disposition, pointed out to his brother the island of Ireland, the conquest of which would be easy, on account of the distracted state in which it almost always was, and which would make him an independent sovereign. This proposal was eagerly embraced by Edward, and every thing necessary for the expedition immediately got ready. On the 25th of May 1315, he landed on the north-eastern coast of Ireland with 6000 men, to assert his claim to the sovereignty of this kingdom. The Irish lords of Ulster, who had invited and encouraged him to this enterprise, were now prepared to receive their new monarch, flocked with eagerness to his standard, and prepared to wreak their vengeance on the common enemy. Their progress was marked by desolation and carnage. The English settlers were slaughtered, or driven from their possessions, their castles levelled with the ground, and their towns set on fire. The English lords were neither prepared to resist the invasion, nor sufficiently united among themselves. The consequence was, that the enemy for some time met with no interruption. An intolerable scarcity of provisions, however, prevented Bruce from pursuing his advantages; and though his brother landed in Ireland with a powerful army, the famine prevented him from being of any essential service. The forces which he left behind him, however, proved of considerable advantage; and by means of this reinforcement, he was enabled to take the city of Carrickfergus.

The terrible devastations committed by Bruce and his associates, now induced some English lords to enter into an association to defend their possessions, and repel these invaders. For this purpose, they raised a considerable body of forces; which coming to an engagement with Fedlim prince of Connaught, one of Bruce's principal allies, entirely defeated and killed him with 8000 of his men. This defeat, however, had very

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little effect on the operations of Bruce himself. He ravaged the country to the walls of Dublin, traversed the district of Ossory, and penetrated into Munster, destroying every thing with fire and sword. The English continued to augment their army, till at last it amounted to 30,000 men; and then Bruce, no longer able to oppose such a force, found it necessary to retire into the province of Ulster. His retreat was effected with great difficulty; and during the time of his inactivity, the distresses of his army increased to such a degree, that they are said to have fed upon the bodies of their dead companions. At last an end was put to the sufferings and the life of this adventurer in the battle of Dundalk, in 1318, where he was defeated and killed by the English under Sir Robert Birmingham. A brave English knight, named *Maufras*, had rushed forward to encounter Bruce himself, and both antagonists had killed each other; the body of *Maufras* being found, after the battle, stretched upon that of Bruce. The king of Scotland had been advancing with powerful succours to his brother: but Edward, confident of victory, refused to wait his arrival; and Robert, on hearing of his brother's death, instantly retired.

42
They are
totally de-
feated.

The defeat of the Scottish invaders did not put an end to the disturbances of this unhappy country. The contentions of the English with one another, of the Irish with the English, and among themselves, still kept the island in a state of the utmost barbarity and confusion. An attempt was made indeed, in the reign of Edward II. to establish an university in Dublin; but for want of proper encouragement the institution for some time languished, and then expired amidst the confusion and anarchy of the country. The reign of Edward III. proved not much more favourable than preceding times had been. He was too much taken up with the idea of conquering France, to pay much regard to the interests of Ireland. The unhappy people, indeed, sensible of their own miseries, petitioned the king to admit all his subjects in Ireland to a participation of the English laws; but the petition being delivered as usual to the chief governor, and laid before the parliament, it was either clandestinely defeated or openly rejected. A new scene of tumult and bloodshed immediately ensued; which at last produced an order from the king, prohibiting all Irishmen, or Englishmen married and having estates in Ireland, from bearing any public office whatever.—This, instead of having a tendency to promote peace, made the disorders much greater than before; and at last produced a remonstrance from the states met at Kilkenny, in which they grievously complain not only of the disorders of the kingdom, but also of the conduct of the king himself in the edict above mentioned: and to this remonstrance the king thought proper to give a gracious and condescending answer, in order to procure from Ireland the succours he wanted in his expedition against France.

43
Miseries of
the Irish
under Ed-
ward III.

It is not to be supposed, that mere promises, unassisted by any vigorous exertion, could make the least alteration in the state of a kingdom involved in so much misery. The disorders, however, at last became insupportable to the inhabitants themselves; and a parliament was summoned in 1367, the result of which was the famous statute of Kilkenny. The preamble

to

Ireland.
44
Statute of
Kilkenny.

to this act recites, that the English had become mere Irish in their language, names, apparel, and manner of living; had rejected the English laws, and submitted to those of the Irish, with whom they had united by marriage-alliance, to the ruin of the common-wealth.—It was therefore enacted, that marriage, nurture of infants, &c. with the Irish, should be considered and punished as high treason.—Again, if any man of English race shall use an Irish name, the Irish language, or the Irish apparel, or any mode or custom of the Irish, the act provides, that he shall forfeit lands and tenements, until he hath given security in the court of chancery to conform in every particular to the English manners; or if he have no lands, that he shall be imprisoned till the like security be given. The Brehon law was pronounced to be a pernicious custom and innovation lately introduced among the English subjects; and it was therefore ordained, that in all their controversies they should be governed by the common law of England; and that whoever should submit to the Irish jurisdiction, should be adjudged guilty of high treason. As the English had been accustomed to make war or peace with the bordering Irish at pleasure, they were now expressly prohibited from levying war without special warrant from the state.—It was also made highly penal for the English to permit their Irish neighbours to graze their lands, to prevent them to ecclesiastical benefices, or to receive them into monasteries or religious houses; to entertain their bards, who perverted their imaginations by romantic tales; or their news-tellers, who seduced them by false reports.—It was made felony to impose or cede any forces upon the English subject against his will. And as the royal liberties and franchises were become sanctuaries for malefactors, express power was given to the king's sheriffs to enter into all franchises, and there to apprehend felons and traitors.—Lastly, because the great lords, when they levied forces for the public service, acted with partiality, and laid unequal burdens upon the subjects, it was ordained that four wardens of the peace in every county should adjudge what men and armour every lord or tenant should provide.—The statute was promulged with particular solemnity; and the spiritual lords, the better to enforce obedience, denounced an excommunication on those who should presume to violate it in any instance.

This statute, it is evident, could not tend to promote the peace of the kingdom. This could only have been done by removing the animosity between the native Irish and English; but so far was the statute of Kilkenny from having any tendency of this kind, that it manifestly tended to increase the hatred between them. During the whole of this reign, therefore, the state of the Irish government continued to be greatly disordered and embroiled. The English interest gradually declined; and the connections of the king's subjects with the original inhabitants, occasioned by their vicinity and necessary intercourse, in despite of all legal injunctions, obliged the king to relax the severity of the statutes of Kilkenny, in cases where they proved impracticable, or oppressive in the execution. The perpetual hostility, however, in which the different parties lived, proved an effectual bar to the introduction of those arts which contribute to the comfort and

refinement of mankind. Even foreign merchants could not venture into such a dangerous country without particular letters of protection from the throne. The perpetual succession of new adventurers from England, led by interest or necessity, served only to inflame dissension, instead of introducing any essential improvement. Lawyers sent from England were notoriously insufficient, if not corrupt; and, as such, had frequently been the objects of complaint. The clergy were a mean grovelling race, totally influenced by the crown. Even prelates were commonly made the inferior agents of government in collecting forces, and raising war against the Irish enemy; but were not to be enticed into this service, except by remittances from the exchequer. Attendance in parliament they dreaded as the greatest hardship; and either recurred to mean excuses to avert the penalty of absence, or sued to the king to be exempted by patent from contributing or assenting to those laws by which they were to be governed.

In this deplorable situation the kingdom continued till the time of Henry VII. who laid the foundation of the future civilization of the Irish, as he also did of the English nation. This he effected by enacting some salutary laws, and appointing faithful and active governors to see them put in execution. Of these governors Sir Edward Poynings contributed more than any other to the tranquillity of the state. During his administration was enacted the law known by the name of *Poyning's Law*, and which hath since been the subject of much political debate. The purport of it was, That no parliament should be held in that island without first giving notice to the king of England, and acquainting him with the acts to be passed in that parliament; neither should any act passed, or any parliament held, without the approbation of the king and council, be deemed valid. Thus was the power of the turbulent barons greatly broken; and the governor, not having it in his power to assemble parliaments when he pleased, became a person of much less consequence. The whole Irish legislation also became dependent on that of England, and hath ever since continued to be so.

From this time we may date the revival of the English power in Ireland; which from the Scottish war in the time of Edward II. had gradually declined into a miserable and precarious state of weakness. The authority of the crown, which had at last been desisted, insulted, and rejected, even in the English territory, was restored and confirmed, and the rebellious vigorously opposed and suppressed. The feignory of the British crown over the whole body of the Irish, which in former reigns seemed to have been totally forgotten, was now formally claimed and asserted, and some of the most ferocious chieftains by their marriage-connections became the avowed friends of the English power. An ignominious tribute, called the *Black Rent*, was indeed still paid to some chieftains; but their hostilities were opposed and chastised, and even in their own districts they were made to feel the superiority of English government.

During the reign of Henry VIII. the Irish affairs were neglected; and the disorders, which had only been checked, and never thoroughly eradicated, returned as usual. They were further promoted by the

Ireland.

45
Power of
the English
revives under
Henry VII.

46
Poyning's
law.

Ireland.

47
All the
disorders
ended in
the reign
of queen
Elizabeth.

innovations in religion which the king introduced, and which were exceedingly disagreeable both to English and Irish. The Reformation, however, continued to make some progress, though slowly, during the reign of Edward VI. and even in the reign of queen Mary; for as the persecution did not reach thither, many Protestants fled to Ireland in order to avoid the queen's cruelty. The machinations of the Spaniards against queen Elizabeth excited the Irish to fresh insurrections. The king of Spain, indeed, not only encouraged the natives in those insurrections, but actually sent over troops to assist them in driving out the English altogether. This they had well nigh effected; but the Spaniards, upon seeing an army of Irish defeated by a handful of their enemies, were so much provoked that they surrendered all the places they had made themselves masters of, and even offered to assist the English in reducing the rebels; though it was not thought proper to accept of their assistance. The consequence of this was, that the Irish, abandoned by these allies, were unable to carry on the war; and the grand rebel O'Neal of Tirowen, or Tirone, after much treachery, evasion, and many pretended submissions, was at last obliged to submit in good earnest. He fell upon his knees before the deputy, and petitioned for mercy with an air and aspect of distress. He subscribed his submission in the most ample manner and form. He implored the queen's gracious commiseration; and humbly sued to be restored to his dignity, and the state of a subject, which he had justly forfeited. He utterly renounced the name of *O'Neal*, which he had assumed on account of the great veneration in which it was held among the Irish. He abjured all foreign power, and all dependency except on the crown of England; resigned all claim to any lands excepting such as should be conferred upon him by letters patent; promising at the same time to assist the state in abolishing all barbarous customs, and establishing law and civility among his people. The lord deputy, on the part of the queen, promised a full pardon to him and all his followers; to himself the restoration of his blood and honours, with a new patent for his lands, except some portions reserved for certain chieftains received into favour, and some for the use of English garrisons.

No insurgent now remained in this kingdom who had not obtained or sued for mercy. Many, indeed, were driven by necessity to the continent, and earned a subsistence by serving in the armies of Spain; and thus a race of Irish exiles was trained to arms, filled with a malignant resentment against the English. Thus the honour of reducing all the enemies of the crown of England in this island, after a continued contest for 440 years, was reserved for the arms of Elizabeth. The ghastliness of famine and desolation was now somewhat enlivened by the restoration of tranquillity. Indeed, from the most authentic accounts, the prices of provisions were so high, that considering the value of money at that time, it is surprising how the inhabitants could subsist. From an account of the rates of provisions taken by the mayor of Dublin in 1602, it appears, That wheat had risen from 36 s. to 9 l. the quarter; barley-malt from 10 s. to 43 s. the barrel; oat-malt from 5 s. to 28 s. the barrel; pease from 5 s. to 40 s. the peck; oats from 3 s. 4 d. to 20 s. the No 169.

48
Exorbitant
prices of
provisions
at that
time.

barrel; beef from 26 s. 8 d. to 8 l. the carcase; mutton from 3 s. to 26 s. the carcase; veal from 10 s. to 29 s. the carcase; a lamb from 12 d. to 6 s.; a pork from 8 s. to 20 s.

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Under James I. Ireland began to assume a quite different appearance. That monarch valued himself upon promoting the arts of peace, and made it his study to civilize his barbarous Irish subjects. By repeated conspiracies and rebellions, a vast tract of land had escheated to the crown in six northern counties, Tyrconnel, now called *Down*, Tirone, Derry, Fermanagh, Cavan, and Armagh, amounting to about 500,000 acres; a tract of country covered with woods, where rebels and banditti found a secure refuge, and which was destined to lie waste without the timely interposition of government. James resolved to dispose of these lands in such a manner as might introduce all the happy consequences of peace and cultivation. He caused surveys to be taken of the several counties where the new settlements were to be established; described particularly the state of each; pointed out the situations proper for the erections of towns and castles; delineated the characters of the Irish chieftains, the manner in which they should be treated, the temper and circumstances of the old inhabitants, the rights of the new purchasers, and the claims of both; together with the impediments to former plantations, and the methods of removing them.

At his instance it was resolved, that the persons to whom lands were assigned should be either new undertakers from Great Britain, especially from Scotland, or *foritors*, as they were called; that is, men who had for some time served in Ireland, either in civil or military offices; or old Irish chieftains or captains. Among the last were included even those Irish who had engaged in the rebellion of Tirone, and still harboured their secret discontents. To gain them, if possible, by favour and lenity, they were treated with particular indulgence. Their under-tenants and servants were allowed to be of their own religion; and, while all the other planters were obliged to take the oath of allegiance, they were tacitly excepted. The servitors were allowed to take their tenants either from Ireland or Britain, provided no Popish recusants were admitted. The British undertakers were confined to their own countrymen.

In the plantations which had been formerly attempted, the Irish and English had been mixed together, from a fond imagination that the one would have learned civility and industry from the other. But experience had now discovered, that this intercourse served only to make the Irish envy the superior comforts of their English neighbours, and to take the advantage of a free access to their houses to steal their goods and plot against their lives. It was therefore deemed necessary to plant them in separate quarters; and in the choice of these situations, the errors of former times were carefully corrected. The original English adventurers, on their first settlement in Ireland, were captivated by the fair appearance of the plain and open districts. Here they erected their castles and habitations; and forced the old natives into the woods and mountains, their natural fortresses. There they kept themselves unknown, living by the milk of their kine, without husbandry or tillage; there they increased to in-

Ireland. incredible numbers by promiscuous generation; and there they held their assemblies, and formed their conspiracies, without discovery. But now the northern Irish were placed in the most open and accessible parts of the country, where they might lie under the close inspection of their neighbours; and be gradually habituated to agriculture and the mechanic arts. To the British adventurers were assigned places of the greatest strength and command; to the servitors, stations of the greatest danger, and greatest advantage to the crown: but as this appeared a peculiar hardship, they were allowed guards and entertainment, until the country should be quietly and completely planted.

The experience of ages had shown the inconvenience of enormous grants to particular lords, attended with such privileges as obstructed the administration of civil government: and, even in the late reign, favourite undertakers had been gratified with such portions of land as they were by no means able to plant. But, by the present scheme, the lands to be planted were divided in three different proportions; the greatest to consist of 2000 English acres, the least of 1000, and the middle of 1500. One half of the escheated lands in each county was assigned to the smallest, the other moiety divided between the other proportions: and the general distributions being thus ascertained, to prevent all disputes between the undertakers, their settlements in the respective districts were to be determined by lot. Estates were assigned to all, to be held of them and their heirs. The undertakers of 2000 acres were to hold of the king *in capite*; those of 1500, by knights service; those of 1000, in common soccage. The first were to build a castle, and inclose a strong court yard, or *bawn* as it was called, within four years; the second, to finish an house and bawn within two years; and the third, to inclose a bawn; for even this rude species of fortification was accounted no inconsiderable defence against an Irish enemy. The first were to plant upon their lands, within three years, 48 able men of English or Scottish birth, to be reduced to 20 families; to keep a demesne of 600 acres in their own hands; to have four free-farmers on 120 acres each; six lease holders, each on 100 acres; and on the rest, eight families of husbandmen, artificers, and cottagers. The others were under the like obligations proportionably. All were, for five years after the date of their patents, to reside upon their lands either in person, or by such agents as should be approved by the state, and to keep a sufficient quantity of arms for their defence. The British and servitors were not to alienate their lands to mere Irish, or to demise any portions of them to such persons as should refuse to take the oaths to government; they were to let them at determined rents, and for no shorter term than 21 years or three lives. The houses of their tenants were to be built after the English fashion, and united together in towns or villages. They had power to erect manours, to hold courts-baron, and to create tenures. The old natives, whose tenures were granted in fee-simple, to be held in soccage, were allowed the like privileges. They were enjoined to set their lands at certain rents, and for the like terms as the other undertakers; to take no Irish exactions from their inferior tenants, and to oblige them to forsake their old Scythian custom of wandering with their cattle from place to place for pasture, or *creaghting*, as they called it; to dwell in towns, and conform to the English manner of tillage and husbandry. An annual rent from all the lands was reserved to the crown for every 60 English acres, six shillings and eight pence from the undertakers, ten shillings from servitors, and 13 shillings and four pence from Irish natives. But for two years they were exempt from such payments, except the natives, who were not subject to the charge of transportation. What gave particular credit to this undertaking, was the capital part which the city of London was persuaded to take in it. The corporation accepted of large grants in the county of Derry; they engaged to expend L. 20,000 on the plantation, to build the cities of Derry and Colerain, and stipulated for such privileges as might make their settlements convenient and respectable. As a competent force was necessary to protect this infant plantation, the king, to support the charge, instituted the order of baronets, an hereditary dignity, to be conferred on a number not exceeding 200; each of whom, on passing his patent, was to pay into the exchequer such a sum as would maintain 30 men in Ulster, for three years, at 8*d.* daily pay.

But scarcely had the lands been allotted to the different patentees, when considerable portions were reclaimed by the clergy as their rightful property. And so far had the estates of the northern bishoprics been embarrassed, both by the usurpations of the Irish lords, and the claims of patentees, that they scarcely afforded a competent, much less an honourable, provision for men of worth and learning, while the state of the parochial clergy was still more deplorable. Most of the northern churches had been either destroyed in the late wars or had fallen to ruin: the benefices were small, and either shamefully kept by the bishops in the way of commendam or sequestration; or filled with ministers as scandalous as their income. The wretched flock was totally abandoned; and for many years divine service had not been used in any parish-church of Ulster, except in cities and great towns. To remedy these abuses, and to make some proper provision for the instruction of a people immersed in lamentable ignorance, the king ordained, that all ecclesiastical lands should be restored to their respective sees and churches, and that all lands should be deemed ecclesiastical from which bishops had in former times received rents or pensions: that compositions should be made with the patentees for the site of cathedral churches, the residences of bishops and dignitaries, and other church-lands which were not intended to be conveyed to them; who were to receive equivalents if they compounded freely; or else to be deprived of their patents as the king was deceived in his grant, and the possessions restored to the church. To provide for the inferior clergy, the bishops were obliged to resign all their impropriations, and relinquish the tythes paid them out of parishes, to the respective incumbents; for which ample recompence was made out of the king's lands. Every proportion allotted to undertakers was made a parish, with a parochial church to each. The incumbents, besides their tythes and duties, had glebe-lands assigned to them of 60, 90, or 120 acres, according to the extent of their parishes. To provide for a succession of worthy pastors, free-schools were endowed in the

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^{Ireland.} the principal towns, and considerable grants of lands conferred on the university of Dublin, which had been re-established by queen Elizabeth, together with the advowson of six parochial churches; three of the largest, and three of the middle proportion in each county.

Such was the general scheme of this famous northern plantation, so honourable to the king, and of such consequence to the realm of Ireland. Its happy effects were immediately perceived, although the execution by no means corresponded with the original idea. Buildings were slowly erected; British tenants were difficult to be procured in sufficient numbers; the old natives were at hand, offered higher rents, and were received into those districts from which it was intended to exclude them. In this particular, the Londoners were accused of being notoriously delinquent. They acted entirely by agents; their agents were interested and indolent, and therefore readily countenanced this dangerous intrusion of the natives; an error of which sufficient cause was afterwards found to repent. For the present, however, a number of loyal and industrious inhabitants was poured into the northern counties, considerable improvements made by the planters, and many towns erected. To encourage their industry, and advance his own project, the king was pleased to incorporate several of these towns, so that they had a right of representation in the Irish parliament.

⁵⁰ The only disturbance that now ensued was from the Popish party, who never could bear to see the Protestant religion established in preference to their own, while they had power to resist. After numberless ineffectual machinations and complaints, their fury broke out in a terrible massacre of the new English settlers in the year 1641*.

* See *Brit. tain*, n° 103—106.

The affairs of Britain were at that time in such confusion, that the rebellion could not be quelled in less than ten years; during which time the country was reduced to a most deplorable situation. It recovered again under Cromwell, Charles II. and the short reign of James II. On the accession of William III. matters were once more thrown into confusion by an attempt made in favour of the exiled monarch, who came over thither in person, and whose bad success is related under the article *BRITAIN*, n° 309—325. Since that time, Ireland hath recovered from the miserable situation to which it was so long reduced. As yet, however, it is far from being in such a flourishing state as either South or North Britain. One great obstacle to the improvement of the kingdom is the extreme poverty and oppression of the common people. The produce of the kingdom, either in corn or cattle, is not above two thirds at most of what by good cultivation it might yield. The high roads throughout the southern and western parts are lined with beggars, who live in huts or cabins without chimnies, or any covering capable of defending the wretched inhabitants from the cold, wind, and rain. "It is a scandal (says a judicious traveller, who lately visited Ireland) to the proprietors of this fertile country, that there is not the greatest plenty of good corn and hay in it; but some of the best land in the king's dominions is suffered to be torn in pieces, and cultivated in the vilest manner, by a set of abject miserable occupiers; who are absolutely no better than

slaves to the despicable, lazy, and oppressive subordinate landlords."

Another cause consisted in the various restrictions which it had been thought proper to lay upon the Irish trade, and the constant and great preference given by government to the English manufacturers, at last produced the most grievous discontents and distresses. On the part of England it was supposed, that as Ireland had been subdued by force of arms, the inhabitants ought in every respect to be subject to the victorious state; and that the interest of the English ought on all occasions to be consulted, without regarding the inconveniences which might ensue to the Irish. A very different idea, however, was entertained by the Irish themselves, or at least by the patriotic party among them. They rejected all notions of dependence upon the British ministry and parliament; and though they did not scruple to acknowledge the king's right of conquest, they most positively denied that the British parliament had any authority whatever over them; and therefore looked upon the restrictions laid upon their trade as the most grievous and intolerable oppression.

In the year 1719, according to Mr Crawford, the oppression and grievances of Ireland became altogether insupportable. A cause relative to an estate, betwixt Hester Sherlock and Maurice Annesley, was tried before the court of exchequer in Ireland. Here the latter obtained a decree in his favour; but, on an appeal, the sentence was reversed by the lords. Annesley appealed from them to the English peers; who having reversed the judgement of those of Ireland, he was put in possession of the subject in dispute. Sherlock appealed again to the Irish lords, and the matter became very serious. It was proposed to the consideration of the judges, Whether by the laws of the land an appeal lies from a decree of the court of exchequer in Ireland to the king in parliament in Britain. This question being determined in the negative, Sherlock was again put in possession of the estate. A petition was some time after presented to the house by Alexander Burrowes sheriff of Kildare, setting forth, "That his predecessor in office had put Sherlock in possession of the premises; that, upon his entering into office, an injunction, agreeable to the order of the English peers, issued from the exchequer, requiring him to restore Maurice Annesley to the possession of the above mentioned lands; and that, not daring to act in contradiction to the order of the house, he was fined. In consequence of this, being afraid lest he should be taken into custody, he durst not come in to pass his accounts; and for this he was fined L.1200." His conduct was applauded by the Irish lords, who commanded the fines imposed upon him to be taken off; and in a short time after drew up a memorial to be presented to his majesty. In this they set forth, that having submitted to Henry II. as their liege lord, they had from him obtained the benefit of English law, with many other privileges, particularly that of having a distinct parliament. In consequence of this concession, the English had been encouraged to come over and settle in Ireland, where they went to enjoy the same privileges as in their own country. They farther insisted, that though the imperial crown of Ireland was annexed to that of Britain, yet being a distinct dominion, and no part of the kingdom

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⁵¹ Origin of the Irish discontents.
⁵² State of the argument for and against the Irish.

⁵³ Cause of Sherlock and Annesley in 1719.

⁵⁴ Dispute between the peers of Ireland and England.

Ireland. kingdom of England, none could determine with regard to its affairs, but such as were authorized by its known laws and customs, or the express consent of the king. It was an invasion of his majesty's prerogative for any court of judicature to take upon them to declare, that he could not by his authority in parliament determine all controversies betwixt his subjects of this kingdom; or that, when they appealed to his majesty in parliament, they did not bring their cause before a competent judicature: and they represented, that the practice of appeals from the Irish parliament to the British peers was an usurped jurisdiction assumed by the latter; the bad consequences of which they pointed out very fully.

This representation being laid before his majesty in parliament, it was resolved, that the barons of exchequer in Ireland had acted with courage and fidelity, according to law, &c. and an address was presented to his majesty, praying him to confer on them some mark of his royal favour as a recompense for the injuries they had sustained from the Irish legislature. This was followed by a bill for the better securing the dependency of Ireland upon the crown of Great Britain. By this it was determined, "That the house of lords of Ireland have not, nor of right ought to have, any jurisdiction to judge of, affirm, or reverse, any judgment, sentence, or decree, given or made in any court within the kingdom; and that all proceedings before the said house of lords, upon any such judgment or decree, are utterly null and void to all intents and purposes whatever." It was also determined in this bill, that "the king's majesty, by and with the advice and consent of the lords spiritual and temporal, and commons of Great Britain in parliament assembled, had, hath, and of right ought to have, full power and authority to make laws and statutes of sufficient force and validity to bind the people of Ireland."

This bill was looked upon by the Irish to be equivalent to a total annihilation of their liberties; and they were still farther exasperated in the year 1724, by the patent granted to one Wood an Englishman to coin halfpence and farthings for the use of Ireland. In this affair Wood is said to have acted very dishonourably; inasmuch that a shilling of the halfpence he made were scarcely worth a penny. Great quantities of this base coin were sent over; and it was used not only in change, but accounts were likely to be paid in it, so that dangerous consequences seemed ready to ensue. The Irish parliament, in an address to the king, represented that they were called upon by their country to lay before his majesty the ill consequences of Wood's patent, and that it was likely to be attended with a diminution of the revenue and the ruin of trade. The same was set forth in an application made to his majesty by the privy council. In short, the whole nation seemed to unite their efforts in order to remedy an evil of such dangerous tendency, the effects of which already began to be felt.

Among the controversial pieces which appeared on this occasion, those of Dr Swift were particularly distinguished. His Drapier's letters are to this day held in grateful remembrance by his countrymen; but he was in danger of suffering deeply in the cause. He had been at particular pains to explain an argument used by the Irish on this occasion, viz, that brass

money, being illegal, could not be forced upon the nation by the king, without exceeding the limits of his prerogative. Hence the opposite party took occasion to charge the Irish with a design of calling off their dependence on Britain altogether: but Swift having examined the accusation with freedom, pointed out the encroachments made by the British parliament on the liberties of Ireland; and asserted, that any dependence on England, except that of being subjects to the same king, was contrary to the law of reason, nature, and nations, as well as to the law of the land. This publication was so disagreeable to government, that they offered a reward of L.300 for the discovery of the author; but as nobody could be found who would give him up, the printer was prosecuted in his stead: however, he was unanimously acquitted by a jury of his countrymen.

The Irish continued to be jealous of their liberties, while the British ministry seemed to watch every opportunity of encroaching upon them as far as possible. Apprehensions being entertained of a design upon Ireland by the partisans of the pretender in 1715, a vote of credit to government was passed by the house of commons to a considerable amount. This laid the foundation of the national debt of that kingdom, which was quickly augmented to several hundred thousand pounds; for discharge of which a fund had been provided by administration. An attempt was made during the administration of Lord Carteret (who governed Ireland till 1730), to vest this fund in the hands of his majesty and of his heirs for ever, redeemable by parliament. This was opposed by the patriotic party, who insisted, that it was inconsistent with the public safety, and unconstitutional, to grant it longer than from session to session. In 1731 another attempt was made to vest the same in the crown for 21 years; but when the affair came to be debated, the strength of both parties was found to be equally balanced. Immediately before the vote, however, Colonel Tottinham having rode post on the occasion, arrived in the house, and determined the question against government.

The behaviour of Lord Chesterfield, who was made governor of Ireland in 1745, is highly extolled on account of his moderation, and the favour he showed to the liberties of the people. As the apprehensions of government were then very considerable, on account of the rebellion which raged in Scotland, his lordship was advised to augment the military force of Ireland by 4000 men. Instead of this, however, he sent four battalions to the duke of Cumberland, and encouraged the volunteer associations which formed in different parts for the defence of their country. These battalions he replaced by additional companies to the regiments already on the establishment; by which means he saved a considerable expence to the nation, without augmenting the influence of the crown. The supplies asked by him were small, and raised in the most easy and agreeable manner to the people, expending the money at the same time with the utmost economy. There was even a saving, which he applied to the use of the public. It had been a custom with many of the lieutenant governors of Ireland to bestow pensionary grants, in order to purchase the assistance of friends in support of their measures. Lord Chesterfield, how-

Ireland.
59
Dispute with government about the fund for payment of the national debt.

60
Excellent conduct of Lord Chesterfield.

Ireland.

61
His humanity to the Roman Catholics.

ever, being convinced that this practice was prejudicial to the interest of the nation, put a stop to it; but the most remarkable part of his administration was, the humanity with which he treated the Roman Catholics. Before his arrival, the Romish chapels in Dublin had been shut up; their priests were commanded by proclamation to leave the kingdom; and such as disobeyed had been subjected to imprisonment and other penalties. Lord Chesterfield, however, convinced that the affection is to be engaged by gentle usage, permitted them to exercise their religion without disturbance. The accusations brought against them of forming plots against government, were disregarded; and so much was his moderation and uprightness in this respect applauded by all parties, that, during the whole time of his administration, the national tranquillity was not once interrupted by the smallest internal commotion. On his leaving the island, his bust was placed at the public expence in the castle of Dublin.

62
Account of Mr Lucas the celebrated patriot.

Lord Chesterfield having left Ireland in the spring of 1746, the island continued to be governed by lords justices until the 13th of September, when William earl of Harrington came over with the powers of lord lieutenant. A contest in the election of representatives for the city of Dublin this year called forth the abilities of Mr Charles Lucas, so much celebrated for his patriotic virtues. Having some years before been admitted a member of the common council, he resolved to exert himself in behalf of the privileges of his fellow-citizens. The powers of this city-corporation, as well as of others, had been changed by authority derived from an act in the time of Charles II. and among other innovations, for the purpose of augmenting the influence of the crown, they deprived the commons of the power of choosing the city magistrates. This was now vested in the board of aldermen; which being subject in the exercise of its jurisdiction to the approbation of the privy council, was consequently dependent on government. Mr Lucas complained loudly of the injury; but as this law could not be altered, he set himself to inquire, whether encroachments, which could not be justified by law, had not been made on the rights of the citizens? Having satisfied himself, by searching diligently into ancient records, that his apprehensions were well-founded, he published his discoveries, explained the nature of the evidence resulting from them, and encouraged the people to take the proper steps for obtaining redress.

The consequence of this was a contest between the commons and aldermen, which lasted two years. The former struggled in vain to recover their lost privileges; but the exertions of Lucas in every stage of the dispute had rendered him so respectable among his countrymen, that on the death of Sir James Somerville he was encouraged to declare himself a candidate for a seat in parliament. This being highly agreeable to his wishes, he was elected accordingly; and distinguished himself not only by the boldness and energy of his speeches, but more especially by a number of addresses to his countrymen. In some of these he particularly considered the several branches of the constitution, and pointed out the encroachments of the British legislature. Government, alarmed at his boldness, determined to crush him by the hand of power; for which

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reason the most obnoxious paragraphs were extracted from his works, and made the foundation of a charge before parliament. The commons voted him an enemy to his country; and addressed the lord lieutenant for an order to prosecute him by the attorney-general. The universal esteem in which he was held could not screen him from ministerial vengeance: he was driven from Ireland; but having spent some years in banishment, he was once more enabled, through the exertions of his friends, to present himself as a candidate for the city of Dublin. Being again elected, he continued to distinguish himself by the same virtuous principles for which he had been from the beginning so remarkable, and died with the character which he had preserved through life, of the *incorruptible* Lucas.

In the year 1753, a remarkable contest took place betwixt government and the Irish parliament relative to previous consent. As the taxes for defraying state expences are imposed by the representatives of the people, it thence naturally follows, that they have a right to superintend the expenditure of them; and by an inspection of the journals of the house of commons, it appeared, that from the year 1692 they had exercised a right of calling for and examining the public accounts. When any surplus remained in the treasury, it was also customary to dispose of it by bill for the good of the public. In the year 1749, however, a considerable sum having remained in the treasury, the disposal of this money in future became an object to ministry. In 1751, it was intimated to parliament by the lord lieutenant, the duke of Dorset, that his majesty would graciously consent and recommend it to them, that such part of the money as then remained in the treasury should be applied to the reduction of the national debt." As this implied a right inherent in his majesty to dispose of the money as he thought proper, the proposal was accounted an invasion of the privileges of the house of commons. No notice was therefore taken of the direction given by Dorset, but the bill was sent over to England as usual without any notice taken of his majesty's consent. In England, however, this very material alteration was made, and the word *consent* introduced into it. The commons at this time did not take any notice of such an essential alteration; but next year, on its being repeated, the bill was rejected. Government were now at the utmost pains to defend the measure they had adopted, and pamphlets were published in which it was justified on various grounds. The event at last, however, was, that his majesty by letter took the money which had been the subject of dispute out of the treasury.

In the year 1760 Ireland sustained an inconsiderable hostile invasion, the first that had been experienced in the kingdom for 70 years. The armament consisted originally of five ships; one of 48 guns, two of 36, and two of 24; having on board 1270 land-forces. They were commanded by the celebrated Thurot, whose reputation, as captain of a privateer, had advanced him to this dignity. The squadron, however, was driven by adverse winds to Gottenburgh; where having continued a few days, they set sail for the place of their destination. On their arrival at the coast of Ireland, they were obliged to shelter themselves in Lough Foyle from a violent storm which again overtook them. The wind, however, having shifted, and continuing to blow

63

Dispute with government concerning previous consent.

64

Invasion by Thurot in 1760.

Ireland.

blow tempestuously, they were obliged to keep out to sea. Two of the ships were thus separated from the rest by the violence of the storm, and returned to France; but the remaining three directed their course to the island of Ilay, where they anchored; and having repaired their damages, took in a supply of provisions, and thence sailed to Carrickfergus.

In the mean time, an officer belonging to the small number of troops at that time in Carrickfergus took post on a rising ground, with an advanced party, to observe the motions of the enemy. A skirmish ensued betwixt this party and Thurot's men, until the former, having expended all their ammunition, were obliged to retire into the town. Having in vain attempted to prevent the enemy from taking possession of it, the British troops shut themselves up in the castle, where they were soon obliged to capitulate, after having killed about 100 of their enemies, with the loss of only three on their own part. The French having plundered the town, set sail on the 26th of February; and three days after were all taken by Captain Elliot, Thurot himself being killed in the engagement.

65
Rise of the
White
Boys.

Soon after the accession of George III. Ireland first began to be disturbed by a banditti who styled themselves *White Boys*; and as these were generally of the Romish persuasion, the prejudices against that sect broke forth in the usual manner. A plot was alleged to have been formed against government; French and Spanish emissaries to have been sent over to Ireland, and actually to be employed to assist in carrying it into execution. The real cause of this commotion, however, was as follows: About the year 1739 the murrain broke out among the horned cattle in the duchy of Holstein, from whence it soon after spread through the other parts of Germany. From Germany it reached Holland, from whence it was carried over to England, where it raged with great violence for a number of years. The mitigation of the penal laws against the Papists about this time encouraged the natives of the south of Ireland to turn their thoughts towards agriculture, and the poor began to enjoy the necessities of life in a comfortable manner. A foreign demand for beef and butter, however, having become uncommonly great, by reason of the cattle distemper just mentioned, ground appropriated to grazing became more valuable than that employed in tillage. The cotters were every where dispossessed of their little possessions, which the landlords let to monopolizers who could afford a higher rent. Whole baronies were now laid open to pasturage, while the former inhabitants were driven desperate by want of subsistence. Numbers of them fled to the large cities, or emigrated to foreign countries, while those who remained took small spots of land, about an acre each, at an exorbitant price, where they endeavoured if possible to procure the means of protracting a miserable existence for themselves and families. For some time these poor creatures were allowed by the more humane landlords the liberty of commonage; but afterwards this was taken away, in despite of justice and a positive agreement; at the same time, the payment of tithes, and the low price of labour, not exceeding the wages in the days of Queen Elizabeth, aggravated the distresses of the unhappy sufferers beyond measure.

In such a situation, it is no wonder that illegal me-

Ireland.

thods were pursued in expectation of redress. The people, covered with white skirts, assembled in parties at night, turned up the ground, destroyed bullocks, levelled the inclosures of the commons, and committed other acts of violence. These unavailing efforts were construed into a plot against the government; numbers of the rioters were apprehended in the counties of Limerick, Cork, and Tipperary, and some of them condemned and executed. In different places these unhappy wretches, instead of being looked upon as objects of compassion, were prosecuted with the utmost severity. Judge Aston, however, who was sent over to try them, executed his office with such humanity as did him the highest honour. A most extraordinary and affecting instance of this was, that on his return from Dublin, for above ten miles from Clonmell, both sides of the road were lined with men, women, and children; who, as he passed along, kneeled down and implored the blessing of heaven upon him as their guardian and protector.

In the mean time, the violences of the White Boys continued, notwithstanding that many examples were made. The idea of rebellion was still kept up; and, without the smallest foundation, gentlemen of the first rank were publicly charged with being concerned in it, inasmuch that some of them were obliged to enter bail, in order to protect themselves from injury. The Catholics of Waterford gave in a petition to Lord Hertford, the governor in 1765, in behalf of themselves and brethren, protesting their loyalty and obedience to government; but no effectual step was taken either to remove or even to investigate the cause of the disturbances.

About two years after the appearance of the White Boys, a similar commotion arose in Ulster; which, however, proceeded in part from a different cause, and was of much shorter duration. By an act of parliament, the making and repairing of highways in Ireland was formerly a grievous oppression on the lower ranks of people. An housekeeper who had no horse was obliged to work at them six days in the year; and if he had a horse, the labour of both was required for the same space of time. Besides this oppression, the poor complained that they were frequently obliged to work at roads made for the convenience of individuals, and which were of no service to the public. Nor were these the only grievances of which the insurgents at this time complained: the tithes exacted by the clergy were said to be unreasonable, and the rent of lands was more than they could bear. In 1763, therefore, being exasperated by a road proposed to be made thro' a part of the county of Armagh, the inhabitants most immediately affected by it rose in a body, and declared that they would make no more highways of the kind. As a mark of distinction, they wore oak-branches in their hats, from which circumstance they called themselves *Oak-boys*. The number of their partizans soon increased, and the insurrection became general through the counties of Armagh, Tyrone, Derry, and Fermanagh. In a few weeks, however, they were dispersed by parties of the military; and the public tranquillity was restored with the loss of only two or three lives. The road-act, which had been so justly found fault with, was repealed next session; and it was determined, that for the future the roads should be

66
Of the Oak-Boys.

Ireland. be made and repaired by a tax to be equally assessed on the lands of the rich and poor.

67
Of the Steel
Boys.

Besides these, another set of insurgents called *Steel-boys* soon made their appearance, on the following account. The estate of an absentee nobleman happening to be out of lease, he proposed, instead of an additional rent, to take fines from his tenants. Many of those, who at that time possessed his lands, were unable to comply with his terms; while others who could afford to do so, insisted upon a greater rent from the immediate tenants than they were able to pay. The usual consequences of this kind of oppression instantly took place. Numbers being dispossessed and thrown destitute, were forced into acts of outrage similar to those already mentioned. One of these charged with felony was carried to Belfast, in order to be committed to the county gaol; but his associates, provoked by the usage they had received, determined to relieve him. The design was eagerly entered into by great numbers all over the country; and several thousands, having provided themselves with offensive weapons, proceeded to Belfast in order to rescue the prisoners. To prevent this, he was removed to the barracks and put under the guard of a party of soldiers quartered there; but the *Steel-boys* pressed forward with a determination to accomplish their purpose by force, and some shots were actually exchanged between them and the soldiers. The consequences would undoubtedly have been fatal, had it not been for a physician of highly respectable character, who interposed at the risk of his life, and prevailed on those concerned to set the prisoner at liberty. The tumult, however, was not thus quelled. The number of insurgents daily increased, and the violences committed by them were much greater than those of the other two parties. Some were taken and tried at Carrickfergus, but none condemned. It was supposed that the fear of popular resentment had influenced the judges; for which reason an act was passed, enjoining the trial of such prisoners for the future to be held in counties different from those where the crimes were committed. This breach of a fundamental law of the constitution gave such offence, that though several of the *Steel-boys* were afterwards taken up and carried to the castle of Dublin, no jury would find them guilty. This obnoxious law was therefore repealed; after which some of the insurgents, being tried in their respective counties, were condemned and executed. Thus the commotions were extinguished: but as no methods were taken to remove the cause, the continued distresses of the people drove many thousands of them into America in a very few years.

68
Parliament
of Ireland
made oc-
tennial.

In the mean time a very material alteration had taken place, in the constitution of the kingdom, with regard to the duration of parliaments. At an early period these had continued only for a year; but afterwards they were prolonged until the death of a sovereign, unless he chose to dissolve it sooner by an exertion of his prerogative. Thus, from the moment of their election, the commons of Ireland were in a manner totally independent of the people and under the influence of the crown; and government soon availed itself of this power to bribe a majority to serve its own purposes. Various methods were thought of to remedy this evil; but all proved ineffectual until the

year 1768, when, during the administration of Lord Townshend, a bill was prepared and sent over to England, by which it was enacted, that the Irish parliaments thenceforth should be held every seven years. It was returned with the addition of one year; and ever since the parliaments of this country have been octennial. During this session an attempt was made by the British ministry to infringe the rights of the house of commons in a very material point. A money-bill, which had not originated in Ireland, was sent over from Britain, but was rejected in a spirited manner. Its rejection gave great offence to the Lord Lieutenant, who repeatedly prorogued them till the year 1771.

69
An English
money-bill
rejected.

The affairs of Ireland began now to draw towards that crisis which effected the late remarkable revolution in favour of the liberties of the people. The passing of the octennial bill had diminished, but not taken away, the influence of the crown; and the situation of affairs between Britain and America had inclined ministry to make the most of this influence they could. In 1773 Lord Harcourt, at that time governor of Ireland, exerted himself so powerfully in favour of administration, that the voice of opposition in parliament was almost entirely silenced. The difficulties, however, under which the whole nation laboured, began now to be so severely felt, that an address on the subject was presented by the commons to his excellency. In this they told him, that they hoped he would lay before the king the state of Ireland, restricted in its commerce from the short-sighted policy of former times, to the great injury of the kingdom, and the advantage of the rivals, if not of the enemies, of Great Britain. These hardships, they said, were not only impolitic, but unjust; and they told his excellency plainly, that they expected to be restored to some, if not to all their rights, which alone could justify them to their constituents for laying upon them so many burdens during the course of this session.

70
Distressed
state of Ire-
land laid
before the
lord Lieuten-
ant.

This representation to the Lord Lieutenant produced no effect; and Ireland for some years longer continued to groan under the burden of intolerable restrictions. These had principally taken place in the reign of Charles II. At this time it was enacted, that beef or live cattle should not be exported to England; neither were the commodities of Ireland to be exported to the American colonies, nor American goods to be imported to any port in Ireland without first unloading them in some part of England or Wales. All trade with Asia was excluded by charters granted to particular companies; and restrictions were imposed upon almost every valuable article of commerce sent to the different ports of Europe. Towards the end of King William's reign an absolute prohibition was laid on the exportation of Irish wool. This restriction proved disadvantageous not only to Ireland, but to Great Britain herself. The French were now plentifully supplied by smuggling with Irish wool; and not only enabled to furnish woollen stuffs sufficient for their own consumption, but even to vie with the British in foreign markets. Other restrictions conspired to augment the national calamity; but that which was most sensibly felt took place in 1776. "There had hitherto (says Mr Crawford) been exported annually to America large quantities of Irish linens; this very

71
Account of
the restric-
tions on
the Irish
trade.

con-

Ireland.

considerable source of national advantage was now shut up, under pretence of rendering it more difficult for the enemy to be supplied with the means of subsistence; but in reality, to enable a few rapacious English contractors to fulfil their engagements, an embargo, which continued, was in 1776 laid upon the exportation of provisions from Ireland, by an unconstitutional stretch of prerogative. Remittances to England, on various accounts, particularly for the payment of our forces abroad, were more than usually considerable. These immediate causes being combined with those which were invariable and permanent, produced in this country very calamitous effects. Black cattle fell very considerably in their value; notwithstanding that customers could not be had. The price of wool was reduced in a still greater proportion. Rents every where fell; nor, in many places, was it possible to collect them. An universal stagnation of business ensued. Credit was very materially injured. Farmers were pressed by extreme necessity, and many of them failed. Numbers of manufacturers were reduced to extreme necessity, and would have perished, had they not been supported by public charity. Those of every rank and condition were deeply affected by the calamity of the times. Had the state of the exchequer permitted, grants might have been made to promote industry, and to alleviate the national distress; but it was exhausted to a very uncommon degree. Almost every branch of the revenue had failed. From want of money the militia law could not be carried into execution. We could not pay our forces abroad; and, to enable us to pay those at home, there was a necessity for borrowing 50,000*l.* from England. The money which parliament was forced to raise, it was obliged to borrow at an exorbitant interest. England, in its present state, was affected with the wretched condition to which our affairs were reduced. Individuals there, who had estates in Ireland, were sharers of the common calamity; and the attention of individuals in the British parliament was turned to our situation, who had even no personal interest in this country."

72
Irish affairs taken into consideration by the British parliament.

While things were in this deplorable situation, earl Nugent, in the year 1778, undertook the cause of the Irish, by moving in parliament, that their affairs should be taken into consideration by a committee of the whole house. This motion being agreed to almost unanimously, it was followed by several others, viz. That the Irish might be permitted to export directly to the British plantations, or to the settlements on the coast of Africa, all goods being the produce and manufacture of the kingdom, excepting only wool, or woollen manufactures, &c. That all goods, being the produce of any of the British plantations, or of the settlements on the coast of Africa, tobacco excepted, be allowed to be imported directly from Ireland to all places, Britain excepted. That cotton yarn, the manufacture of Ireland, be allowed to be imported into Great Britain. That glass manufactured in Ireland be permitted to be exported to all places, Britain excepted.—With respect to the Irish sail-cloth and cordage, it was moved, that they should have the same privilege as for the cotton-yarn.

73
Petitions against the proposed relief.

These motions having passed unanimously, bills for the relief of Ireland were framed upon them according-

ly. The trading and manufacturing towns of England, however, now took the alarm, and petitions against the Irish indulgence were brought forward from many different quarters, and members instructed to oppose it. In consequence of this a warm contest took place on the second reading of the bills. Mr Burke supported them with all the strength of his eloquence; and as the minister seemed to favour them, they were committed; though the violent opposition to them still continued, which induced many of their friends at that time to desert their cause.

76

Though the efforts of those who favoured the cause of Ireland thus proved unsuccessful for the present, they renewed their endeavours before the Christmas vacation. They now urged, that, independent of all claims from justice and humanity, the relief of Ireland was enforced by necessity. The trade with British America was now lost for ever; and it was indispensably requisite to unite the remaining parts of the empire in one common interest and affection. Ireland had hitherto been passive; but there was danger that, by driving her to extremities, she would cast off the yoke altogether; or, even if this should not happen, the tyranny of Britain would be of little advantage; as, on the event of a peace, the people would desert a country in which they had experienced such oppression, and emigrate to America, where they had a greater prospect of liberty. On the other hand, they insisted, that very considerable advantages must ensue to Britain by the emancipation of Ireland; and every benefit extended to that country would be returned with accumulated interest. The business was at last summed up in a motion made by lord Newhaven, in February 1779, that liberty should be granted to the Irish to import sugars from the West Indies. This was carried; but the

merchants of Glasgow and Manchester having petitioned against it, it was again lost through the interference of the minister, who now exerted his influence against the relief he had formerly declared in favour of. Various other efforts, however, were made to effect the intended purpose; but nothing more could be obtained than a kind of compromise, by which lord Gower pledged himself, as far as he could answer for the conduct of others, that, during the recess, some plan should be fallen upon for accommodating the affairs of Ireland to the satisfaction of all parties.

77
The New petitioners against them.

In the mean time the affairs of this country hastened to a crisis; which forced the British ministry to give that relief so long solicited, and which they so often promised without any intention of performing their promises. As long as the affairs of the country were under consideration of the British parliament, the inhabitants preserved some degree of patience; but, when they found themselves deserted by the minister, their discontent was inflamed beyond measure. The laws he had passed in their favour, viz. an allowance to plant tobacco, and a bill for encouraging the growth of hemp, were considered as mockery instead of relief, and it was now resolved to take such measures as should effectually convince the ministry that it was not their interest to tyrannize any longer. With this view, associations against the importation of British commodities, which had been entered into in some places before, now became universal throughout the kingdom; and such

78
An universal ferment ensues throughout the kingdom.

79
Associations formed against importing British commodities.

Ireland. as presumed to oppose the voice of the people in this respect, had the mortification to find themselves exposed to public obloquy and contempt on that account. Thus the Irish manufactures began to revive; and the people of Britain found themselves obliged seriously to take into consideration the relief of that country, and to look upon it as a matter very necessary to their own interest. To this also they were still more seriously disposed by the military associations, which had taken place some time before, and now assumed a most formidable appearance. These at first were formed by accidental causes. The situation of Britain, for some time, had not admitted of any effectual method being taken for the defence of Ireland. Its coasts had been insulted, and the trading ships taken by the French and American privateers; nor was it at all improbable that an invasion might soon follow. "The minister (says Mr Crawford) told us, that the situation of Britain was such as rendered her incapable of protecting us. The weakness of government, from the following circumstance, was strikingly obvious. The mayor of Belfast having transmitted a memorial to the Lord Lieutenant, setting forth the unprotected state of the coast, and requesting a body of the military for its defence, received for answer, that he could not afford him any other assistance than half a troop of dismounted horse and half a company of invalids." In this dilemma, a number of the inhabitants of the town associated for the purpose of self-defence; and, on the same principle, a few volunteer companies were formed in different parts of the kingdom. These chose their own officers, purchased their own uniforms and arms, and, with the assistance of persons properly qualified, assembled regularly on the parade to acquire a knowledge in the military art. Their respectable appearance, and the zeal they showed in the service of their country, soon excited curiosity and attracted respect. Their number increased every day; and people of the first consequence became ambitious of being enrolled among them. As no foreign enemy appeared, against whom they might exercise their military prowess, these patriotic bands soon began to turn their thoughts towards a deliverance from domestic oppression. No sooner was this idea made known, than it gave new vigour to the spirit of volunteering; inasmuch that, by the end of 1778, the military associations were thought to amount at least to 30,000 men. But, while thus formidable from their numbers, and openly avowing their intention to demand a restitution of their rights from the British ministry, they professed the utmost loyalty and affection to the king; and with regard to sobriety and decent demeanour, they were not only unexceptionable, but exemplary. Instead of exciting disorders themselves, they restrained every kind of irregularity, and exerted themselves with unanimity and vigour for the execution of the laws.

That such a body of armed men, acting without any command or support from government, should be an object of apprehension to ministry, is not to be wondered at. In the infancy of their associations indeed they might have been suppressed; but matters had been suffered to proceed too far; and, as they stood at present, all resistance was vain. As the volunteers could not be controuled, some attempts were made to bring them under the influence of the crown; but this being

N^o 169.

found impossible, ministry thought proper to treat them with an appearance of confidence; and, accordingly, orders were issued for supplying them with 16,000 stand of arms.

The Irish parliament, thus encouraged by the spirit of the nation, and pressed by the difficulties arising from the diminished value of their estates, resolved to exert themselves in a becoming manner, in order to procure relief to their country. At their meeting in October 1779, an address to his Majesty was drawn up; in which it was expressly declared, that "it was not by temporary expedients, but by a free trade alone, that Ireland was now to be saved from impending ruin." When this address was carried up to the Lord Lieutenant, the streets of Dublin were lined with volunteers, commanded by the duke of Leinster, in their arms and uniform. But, though a general expectation of relief was now diffused, an anxious fear of disappointment still continued. If the usual supply was granted for two years, there was danger of the distresses continuing for all that time; and after it was granted, the prorogation of parliament might put a stop to the expected relief altogether. The people, however, were not now to be trifled with. As the court-party showed an aversion to comply with the popular measures, a mob rose in Dublin, who, among other acts of violence, pulled down the house of the attorney-general, and did their utmost to compel the members to promise their countenance to the matter in hand. When the point therefore came to be debated, some espoused the popular side from principle, others from necessity; so that on the whole a majority appeared in favour of it. A short money bill was passed and transmitted to England; where, though very mortifying to the minister, it passed also.

On the meeting of the British parliament in December, the affairs of Ireland were first taken into consideration in the house of peers. The necessity of granting relief to that kingdom was strongly set forth by the lord who introduced them. He said, the Irish, now conscious of possessing a force and consequence to which they had hitherto been strangers, had resolved to apply it to obtain the advantages of which the nation, by this spirited exertion, now showed themselves worthy. Had they for some time before been gratified in lesser matters, they would now have received with gratitude, what they would, as affairs stood at present, consider only as a matter of right. He then moved for a vote of censure on his Majesty's ministers for their neglect of Ireland. This motion was rejected; but Earl Gower, who had now deserted the cause of ministry, declared, that there did not exist in his mind a single doubt that the vote of censure was not well founded. He added, in his own vindication, that early in the summer he had promised that relief should be granted to Ireland, and had done every thing in his power to keep his word; but that all his efforts had proved fruitless.

In the house of commons the minister found himself so hard pressed by the arguments of the minority, and the short money-bill from Ireland, that he was obliged to declare, that in less than a week he intended to move for a committee of the whole house to take the affairs of Ireland into consideration. On the 13th of December he accordingly brought forward his propositions

Ireland.
86
Lord
North's
propositions
in favour of
the king-
dom.

positions in favour of this kingdom. The design of these was to repeal the laws prohibiting the exportation of Irish manufactures made of wool or wool flocks; to repeal as much of the act of 19th Geo. II. as prohibited the importation of glass into Ireland, except of British manufacture, or the exportation of glass from Ireland; and to permit the Irish to export and import commodities to and from the West Indies and the British settlements on the coast of Africa, subject to such resolutions and restrictions as should be imposed by the Irish parliament.

87
His obser-
vations
upon them.

On these propositions his lordship made several remarks by way of explanation. One object of them, he said, was to restore to Ireland the wool export and woollen manufacture. In 1692, from jealousy or some other motive, an address had been presented by the English parliament, recommending a kind of compact between the two kingdoms; the terms of which were, that England should enjoy the woollen manufacture, and Ireland the linen, exclusively. But notwithstanding this agreement, it was certain, that England carried on the linen manufacture to as great extent as Ireland, while at the same time the former retained the monopoly of woollens. The first step taken, in consequence of this agreement, was to lay a heavy duty, equal to a prohibition, upon all wool and woollens exported; and when this act, which was but a temporary one by way of experiment, expired, the English parliament passed a similar one, and made it perpetual; by means of which and some others a total end was put to the woollen trade of Ireland.

With regard to the trade of Ireland, his lordship observed, that, upon an average of the six years from 1766 to 1772, the export to Ireland was somewhat more than two millions; and, in the succeeding six years, from 1772 to 1778, about as much more; nearly one half being British manufacture and produce; the other half certified articles, of which this country was the medium of conveyance. The native produce, on an average, was somewhat more than 900,000*l.* but of this only 200,000*l.* were woollens. The woollen manufacture of Ireland therefore would long continue in a state of infancy; and though cloths had been manufactured sufficient for home consumption, yet it could hardly be expected that Ireland would rival Great Britain at the foreign markets, when, after the expence of land-carriage, freight, insurance, and factorage, the latter was able to undersell Ireland in her own market on the very spot, even though aided by the low wages and taxes paid in the country.

With regard to the linen, his lordship observed, that however prosperous it might appear, yet still it was capable of great improvement. The idea of extending and improving the linen-manufacture of Ireland originated from a pamphlet written by Sir William Temple; and this gave rise to the compact which had been referred to. But though this compact was now about to be dissolved, it was his opinion that the bounties on importing Irish linens ought not to be discontinued; because it appeared, that the British bounties had operated as a great encouragement to the Irish manufactures, at the same time that the sum appropriated to this purpose amounted to more than 13,000*l.*

With regard to the dissolution of the compact be-
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twixt England and Ireland, he observed, that, as a more liberal spirit had now appeared on both sides of the water, he hoped both kingdoms would be perfectly contented. Ireland would never be able to rival England in the fine woollen fabrics; but allowing the Irish to manufacture their own wool, would put an end to the contraband trade with France: and it ought to be remembered, that whatever was an advantage to Ireland, must, sooner or later, be of singular advantage to Great Britain, and by the proposed regulations in their commercial connections, the two kingdoms would be put more upon an equality.

With regard to the glass manufacture, his lordship likewise observed, that Ireland had been very injuriously treated. Before the act of 19th Geo. II. they had begun to make some progress in the lower branches of the glass manufacture; but by that act they were not only prevented from importing any other glass than what was of British manufacture, but also from exporting their own glass, or putting it on a horse or carriage with a design to be exported. This act had been complained of in Ireland as a great piece of injustice, and it was the intention of his proposition to remove that grievance.

With regard to the third proposition, his lordship observed, that allowing Ireland a free trade to the colonies must be considered as a favour to that kingdom. Considering her even as an independent state, she could set up no claim to an intercourse with the British colonies. By every principle of justice, of the laws of nations, and the custom of the other European powers who had settlements and distant dependencies, the mother country had an exclusive right to trade with, and to forbid all others from having any intercourse with them. Were not this the case, what nation under the sun would spend their blood and treasure in establishing a colony, and protecting and defending it in its infant state, if other nations were afterwards to reap the advantages derived from their labour, hazard, and expence. But though Great Britain had a right to restrain Ireland from trading with her colonies, his lordship declared himself of opinion that it would be proper to allow her to participate of the trade. This would be the only prudent means of affording her relief; it would be an unequivocal proof of the candour and sincerity of Great Britain; and he had not the least doubt but it would be received as such in Ireland. Britain, however, ought not to be a sufferer by her bounty to Ireland; but this would be the case, should the colony trade be thrown open to the latter, without accompanying it with restrictions similar to those which were laid upon the British trade with them. An equal trade must include an equal share of duties and taxes; and this was the only proper ground on which the benefits expected by the Irish nation could be either granted or desired.

Having made some other observations on the propriety of these measures, they were regularly formed into motions, and passed unanimously. In Ireland they were received with the utmost joy and gratitude by both houses of parliament. On the 20th of December the following resolutions were passed; viz. That the exportation of woollen and other manufatures from Ireland to all foreign places will materially tend to relieve its distresses, increase its wealth, promote

Ireland.

88
They are
received
with great
joy by the
Irish.

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its

Ireland. its prosperity, and thereby advance the welfare of Britain, and the common strength, wealth, and commerce of the British empire; that a liberty to trade with the British colonies in America and the West Indies; and the settlements on the coast of Africa, will be productive of very great commercial benefits; will be a most affectionate mark of the regard and attention of Great Britain to the distresses of the kingdom; and will give new vigour to the zeal of his Majesty's brave and loyal people of Ireland to stand forth in support of his Majesty's person and government, and the interest, the honour, and dignity of the British empire." The same resolutions were, next day, passed in the house of peers.

89
Excessive eulogiums on Lord North to the disadvantage of the minority in parliament.

90
They are checked by a letter from a member of the British house of commons.

92
Additional propositions in favour of Ireland.

The highest encomiums were now passed on Lord North. His exertions in favour of Ireland were declared to have been great and noble; he was styled "the great advocate of Ireland;" and it was foretold, that he would be of glorious and immortal memory in that kingdom. But while these panegyrics were so lavishly made on the minister, the members in opposition, in the British parliament, were spoken of in very indifferent terms. It was said, that, while they thought the minister did not mean to go into the business of Ireland, they called loudly for censure against him for not doing it; but when it was found that he meant seriously to take their affairs into consideration, they had then basely seceded, and wholly forsaken the interest of the kingdom. These censures were so loud, that a member of the British house of commons wrote a letter to be communicated to his friends in Ireland, in which he represented, that however politic it might be to compliment the minister on the present occasion, it was neither very wise nor generous in the members of the Irish parliament to be so ready in bestowing invectives against their old friends in England. With regard to the minister, it was alleged, that until he was driven to it by the measures adopted in Ireland, his conduct had been extremely equivocal, dilatory, and indecisive. The minority had been justly incensed against him for having so grossly sacrificed the honour of the nation and the dignity of parliament as to refuse any substantial relief to the Irish, until their own exertions had made it appear that every thing which could be done for them by the British parliament was not a matter of choice but of necessity. The minority, it was said, had earnestly and repeatedly laboured to procure relief for the people of Ireland; and if they had now contented themselves with a silent acquiescence in the minister's propositions, it was only until they should know whether they would be satisfactory to the people of Ireland; and because what was now done, appeared to be more an act of state than of mere parliamentary deliberation and discussion.

To the propositions already mentioned, Lord North added three others. 1. For repealing the prohibition of exporting gold coin from Great Britain to Ireland. 2. For removing the prohibition to import foreign hops into Ireland, and the drawback on the exportation of foreign hops. 3. For enabling his Majesty's Irish subjects to become members of the Turkey company, and to export woollens in British or Irish bottoms to the Levant. In support of this last resolution his lordship urged, that it was necessary, because the

exportation of woollens having been granted to Ireland, the Irish would naturally expect a share in the Turkey trade, which, as matters stood, was not possible, it having hitherto been a received opinion, that no Irishman could be elected a member of the Turkey company. Notwithstanding all the satisfaction, however, with which the news of these bills were received in Ireland, it was not long before thoughts of a different kind began to take place. It was suggested, ⁹¹ that a free trade could be but of little use, if held by a precarious tenure. The repeal of the obnoxious laws ^{New dissenters take place.} was represented as an act of necessity, not of choice, on the part of the British parliament. When that necessity, therefore, no longer existed, the same parliament might recal the benefits it had granted, and again fetter the Irish trade by restrictions perhaps more oppressive than before. To secure the advantages they now possessed, it was necessary that the kingdom should enjoy the benefits of a free constitution. For this the people looked up to the volunteer companies; and the idea of having such a glorious object in their power, augmented the numbers of those which had also been increased from other causes. They had now received the thanks of both houses of parliament, and thus had obtained the sanction of the legislature. Thus many who had formerly scrupled to connect themselves with a lawless body, made no scruple to enter their lists. Government also engaged several of their friends in the volunteer cause. New companies were therefore raised; but whatever might be the political sentiments of the officers, the private men were universally attached to the popular cause. The national spirit was likewise kept up by several patriotic publications, particularly the letters signed Owen Roe O'Neil, which in an especial manner attracted the public attention; nor was the pulpit backward in contributing its part in the same cause.

To give the greater weight to their determinations, ⁹⁴ the volunteers now began to form themselves into battalions; and in a very short time they were all united in this manner, excepting a small number of companies, which, from accidental causes, continued separate. The newspapers were filled with resolutions from the several corps, declaring Ireland to be an independent kingdom, intitled by reason, nature, and compact, to all the privileges of a free constitution; that no power in the world, excepting the king, with the lords and commons of Ireland, had or ought to have, power to make laws for binding the Irish; and that, in support of these rights and privileges, they were determined to sacrifice their lives and property.

Notwithstanding all this zeal, however, the representatives of the people in Ireland seem yet to have behaved in a very supine and careless manner, and to have been entirely obedient to the dictates of government. One of the house of commons declared in the month of April 1780, that "no power on earth, excepting the king, lords, and commons of Ireland, had a right to make laws to bind the people." "Every member in the house (says Mr Crawford), one excepted, acknowledged the truth of the proposition, either in express terms, or by not opposing it; and yet, however astonishing it may appear, it was evident, that had the question been put, it would have been carried in the

Ireland.

91
New dissenters take place.

93
Numbers of the volunteers increased.

94
They form themselves into battalions.

95
Ireland declared an independent kingdom.

96
Service behaviour of the Irish parliament.

Ireland. the negative. The matter was compromised. The question was not put; and nothing relating to it was entered on the journals.

97. Irish mutiny bill made perpetual.
98. Bad tendency of it set forth by Mr Grattan.

This inattention, or rather unwillingness, of the majority to serve their country, was more fully manifested in the case of a mutiny bill, which they allowed to be made perpetual in Ireland, though that in England had always been cautiously passed only from year to year. After it was passed, however, some of the zealous patriots, particularly Mr Grattan, took great pains to set forth the bad tendency of that act. He observed, that standing armies in the time of peace were contrary to the principles of the constitution and the safety of public liberty; they had subverted the liberty of all nations excepting in those cases where their number was small, or the power of the sovereign over them limited in some respect or other; but it was in vain to think of setting bounds to the power of the chief magistrate, if the people chose by a statute to bind themselves to give them a perpetual and irresistible force. The mutiny bill, or martial law methodized, was directly opposite to the common law of the land. It set aside the trial by jury and all the ordinary steps of law; establishing in their stead a summary proceeding, arbitrary crimes and punishments, a secret sentence, and sudden execution. The object of this was to bring those who were subject to it to a state of implicit subordination, and render the authority of the sovereign absolute. The people of England, therefore, from a laudable jealousy on all subjects in which their liberty was concerned, had in the matter of martial law exceeded their usual caution. In the preamble to the mutiny act, they recited part of the declaration of right, "that standing armies and martial law in time of peace, without the consent of parliament, are illegal. Having then stated the purity and simplicity of their ancient constitution, and set forth the great principle of magna charta, they admitted a partial and temporary repeal of it: they admitted an army, and a law for its regulation, but at the same time they limited the number of the former, and the duration of both; confining the existence of the troops themselves, the law that regulated them, and the power that commanded them, to one year. Thus were the standing forces of England rendered a parliamentary army, and the military rendered effectually subordinate to the civil magistrate, because dependent on parliament. Yet the people of England considered the army, even thus limited, only as a necessary evil, and would not admit even of barracks, lest the soldier should be still more alienated from the state of a subject; and in this state of alienation have a post of strength, which would augment the danger arising from his situation. When the parliament of Ireland proceeded to regulate the army, therefore, they ought to have adopted the maxims of the British constitution, as well as the rules of British discipline. But they had totally departed from the maxims and example of the English, and that in the most important concern, the government of the sword. They had omitted the preamble which declared the great charter of liberty; they had left the number of forces in the breast of the king, and under these circumstances they had made the bill perpetual.

It is probable that the bulk of the Irish nation did

not at first perceive the dangerous tendency of the bill in question. The representations of Mr Grattan and others, however, soon opened their eyes, and a general dissatisfaction took place. This was much increased by two unsuccessful attempts in the house of commons; one to obtain an act for modifying Poyning's law; and the other for securing the independency of the judges. A universal disgust against the spiritless conduct of parliament now took place; and the hopes of the people were once more set on the volunteers.

As it became now somewhat probable that these companies might at last be obliged to assert the rights of their countrymen by force of arms, reviews were judged necessary to teach them how to act in larger bodies, and to give them a more exact knowledge of the use of arms. Several of these reviews took place in the course of summer 1780. The spectators in general were struck with the novelty and grandeur of the sight; the volunteers became more than ever the objects of esteem and admiration, and their numbers increased accordingly. The reviews in 1781 exceeded those of the former year; and the dexterity of the corps who had associated more early was now observed to be greater than that of the rest. More than 5000 men were reviewed at Belfast, whose performances were set off to peculiar advantage by the display of 13 pieces of cannon. They showed their alacrity to serve their country in the field, on a report having arisen that the kingdom was to be invaded by the combined fleets of France and Spain; and for their spirited behaviour on this occasion they received a second time the thanks of both houses of parliament.

Such prodigious military preparations could not but alarm the British ministry in the highest degree; and it was not to be doubted that the Irish volunteers would come to the same extremities the Americans had done unless their wishes were speedily complied with. Still, however, it was imagined possible to suppress them, and it was supposed to be the duty of the lord lieutenant to do so. It was during the administration of the duke of Buckingham that the volunteers had grown into such consequence: he was therefore recalled, and the earl of Carlisle appointed in his place. Though it was impossible for the new governor to suppress the spirit of the nation, he found it no difficult matter to obtain a majority in parliament. Thus every redress was for the present effectually denied. Neither the modification of Poyning's law, nor the repeal of the obnoxious parts of the mutiny bill, could be obtained. The volunteers, exasperated at this behaviour, resolved at once to show that they were resolved to do themselves justice, and were conscious that they had power to do so. At a meeting of the officers of the southern battalion of the Armagh regiment, commanded by the earl of Charlemont, the following resolutions were entered into December 28th 1781. 1. That the most vigorous and effectual methods ought to be pursued for rooting corruption out from the legislative body. 2. For this purpose a meeting of delegates from all the volunteer associations was necessary; and Dungannon, as the most central town in the province of Ulster, seemed to be the most proper for holding such a meeting. 3. That as many and lasting advantages might attend the holding such a

Ireland.

99. Reviews of the volunteers appointed.

100. Shameful conduct of the Irish parliament.

103. A general meeting of the volunteers appointed.

Ireland meeting before the present session of parliament was much farther advanced, the 15th of February next should be appointed for it.

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Resolutions
of this
meeting.

These resolutions proved highly offensive to the friends of government, and every method was taken to discourage it. On the appointed day, however, the representatives of 143 volunteer corps did attend at Dungannon; and the results of their deliberations were as follow. 1. It having been asserted, that volunteers, as such, cannot with propriety debate or publish their opinions on political subjects, or on the conduct of parliament, or public men, it was resolved unanimously, that a citizen, by learning the use of arms, does not abandon any of his civil rights. 2. That a claim from any body of men, other than the king, lords, and commons of Ireland, to make laws to bind the people, is illegal, unconstitutional, and a grievance. 3. Resolved, with one dissenting voice only, that the powers exercised by the privy council of both kingdoms, under colour or pretence of the law of Poyning's, are unconstitutional and a grievance. 4. Resolved unanimously, that the ports of this country are by right open to all foreign countries not at war with the king; and that any burden thereupon, or obstruction thereto, excepting only by the parliament of Ireland, are unconstitutional, and a grievance. 5. Resolved, with one dissenting voice only, that a mutiny bill, not limited in point of duration from session to session, is unconstitutional and a grievance. 6. Resolved unanimously, that the independence of judges is equally essential to the impartial administration of justice in Ireland as in England, and that the refusal or delay of this right is in itself unconstitutional and a grievance. 7. Resolved, with 11 dissenting voices only, that it is the decided and unalterable determination of the volunteer companies to seek a redress of these grievances; and they pledged themselves to their country, and to each other, as freeholders, fellow-citizens, and men of honour, that they would, at every ensuing election, support only those who had supported them, and would support them therein, and that they would use all constitutional means to make such pursuit of redress speedy and effectual. 8. Resolved, with only one dissenting voice, that the minority in parliament, who had supported those constitutional rights, are intitled to the most grateful thanks of the volunteer companies, and that an address to the purpose be signed by the chairman, and published with the resolutions of the present meeting. 9. Resolved unanimously, that four members from each county of the province of Ulster, eleven to be a quorum, be appointed a committee till the next general meeting, to act for the volunteer corps, and to call general meetings of the province as occasion requires. 10. The committee being appointed, and the time of general meetings, and some other affairs of a similar nature settled, it was resolved unanimously, that the court of Portugal having unjustly refused entry to certain Irish commodities, the delegates would not consume any wine of the growth of Portugal, and that they would use all their influence to prevent the use of the said wine, excepting what was then in the kingdom, until such time as the Irish exports should be received in the kingdom of Portugal. 11. Resolved, with only two dissenting voices, that they hold the right of private judgment in mat-

ters of religion equally sacred in others as in themselves; and that they rejoiced in the relaxation of the penal laws against the Papists, as a measure fraught with the happiest consequences to the union and prosperity of the inhabitants of Ireland.

While these proceedings took place at Dungannon, the ministry carried all before them in parliament. In a debate concerning the exclusive legislative privileges of Ireland, a law member, speaking of the arbitrary acts of England, asserted, that "power constituted right;" and a motion that the commons should be declared the representatives of the people was carried in the negative. These scandalous proceedings could not but hasten the ruin of their cause. The resolutions entered into at the Dungannon meeting were received throughout the kingdom with the utmost applause. A few days after, Mr Grattan, whose patriotism has been already taken notice of, moved in the house of commons for a long and spirited address to his majesty, declaring the rights of the kingdom, and asserting the principle which now began to prevail, that Ireland could legally be bound by no power but that of the king, lords, and commons of the country; though the British parliament had assumed such a power. This motion was at present rejected by a large majority; but their eyes were soon enlightened by the volunteers.

These having now appointed their committees of correspondence, were enabled to communicate their sentiments to one another with the utmost facility and quickness. An association was formed in the name of the nobility, representatives, freeholders, and inhabitants of the county of Armagh, wherein they set forth the necessity of declaring their sentiments openly respecting the fundamental and undoubted rights of the nation. They declared, that, in every situation in life, and with all the means in their power, they would maintain the constitutional right of the kingdom to be governed only by the king and parliament of Ireland; and that they would, in every instance, uniformly and strenuously oppose the execution of any statutes, excepting such as derived their authority from the parliament just mentioned; and they pledged themselves, in the usual manner, to support what they now declared with their lives and fortunes.

This declaration was quickly adopted by all the other counties, and similar sentiments became universally avowed throughout the king. The change in the British ministry in the spring of 1782 facilitated the wishes of the people. The duke of Portland, who came over as lord lieutenant in April that year, sent a most welcome message to parliament. He informed them, that, "his majesty, being concerned to find that discontents and jealousies were prevailing among his loyal subjects in Ireland, upon matters of great weight and importance, he recommended it to parliament to take the same into their most serious consideration, in order to such a final adjustment as might give mutual satisfaction to his kingdoms of Great Britain and Ireland."

Mr Grattan, whose patriotic efforts had never been slackened, now ventured to propose a second time in parliament the address which had been rejected before. On the 16th of April he began a speech to this purpose with a panegyric on the volunteers, and the late conduct of the people. The Irish, he said, were no longer

Ireland. longer a divided colony, but an united land, manifesting itself to the rest of the world in signal instances of glory. In the rest of Europe the ancient spirit was expired; liberty was yielded, or empire lost; nations were living upon the memory of past glory, or under the care of mercenary armies. In Ireland, however, the people, by departing from the example of other nations, had become an example to them. Liberty, in former times, and in other nations, was recovered by the quick feelings and rapid impulse of the populace. But in Ireland, at the present period, it was recovered by an act of the whole nation reasoning for three years on its situation, and then rescuing itself by a settled sense of right pervading the land. The meeting of the delegates at Dungannon was an original measure; and, like all of that kind, continued to be matter of surprise, until at last it became matter of admiration. Great measures, such as the meeting of the English at Runny Mead, and of the Irish at Dungannon, were not the consequences of precedent, but carried in themselves both precedent and principle; and the public cause in both instances would infallibly have been lost had it been trusted to parliament. The meeting at Dungannon had resolved, that the claim of the British parliament was illegal; and this was a constitutional declaration. The Irish volunteers were associated for the preservation of the laws, but the conduct of the British parliament subverted all law. England, however, had no reason to fear the Irish volunteers; they would sacrifice their lives in her cause. The two nations formed a general confederacy. The perpetual annexation of the crown was a great bond, but magna charta was a greater. It would be easy for Ireland to find a king; but it would be impossible to find a nation who could communicate to them such a charter as magna charta; and it was this which made their natural connection with England. The Irish nation were too high in pride, character, and power, to suffer any other nation to make their laws. England had indeed brought forward the question, not only by making laws for Ireland the preceding session, but by enabling his majesty to repeal all the laws which England had made for America. Had she consented to repeal the declaratory law against America? and would she refuse to repeal that against Ireland? The Irish nation were incapable of submitting to such a distinction.

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It is agreed
to.

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Substance
of the ad-
dress.

Mr Grattan now found his eloquence much more powerful than formerly. The motion which, during this very session, had been rejected by a great majority, was now agreed to after a short debate, and the address to his majesty prepared accordingly. In this, after thanking his majesty for his gracious message, and declaring their attachment to his person and government, they assured him, that the subjects of Ireland are a free people; that the crown of Ireland is an Imperial crown inseparably annexed to that of Britain, on which connection the interests and happiness of both nations essentially depend: but the kingdom of Ireland is distinct, with a parliament of its own; that there is no body of men competent to make laws to bind Ireland, except the king, lords, and commons thereof, nor any other parliament that hath any power or authority of any sort whatsoever, in this country, except the parliament of Ireland. They assured his majesty, that they

humbly conceive, that in this right the very essence of their liberties did exist; a right which they, on the part of all Ireland, do claim as their birthright, and which they cannot yield but with their lives. They assured his majesty, that they had seen with concern certain claims advanced by the parliament of Great Britain, in an act entitled, "For the better securing the dependency of Ireland;" an act containing matter entirely irreconcilable to the fundamental rights of the nation. They informed his majesty, that they conceived this act, and the claims it advanced, to be the great and principal cause of the discontents and jealousies in the kingdom. They assured him, that his commons did most sincerely wish, that all the bills, which become law in Ireland, should receive the approbation of his majesty under the seal of Great Britain; but yet, that they conceived the practice of suppressing their bills in the council of Ireland, or altering them any where, to be another just cause of discontent and jealousy. They further assured his majesty, that an act intitled, "For the better accommodation of his majesty's forces," being unlimited in duration, and defective in some other circumstances, was another just cause of jealousy and discontent. These, the principal causes of jealousies and discontent in the kingdom, they had submitted to his majesty, in humble expectation of redress: and they concluded with an assurance, that they were more confident in the hope of obtaining redress, as the people of Ireland had been, and were, not more disposed to share the freedom of England, than to support her in her difficulties, and to share her fate.

To this remarkable address a most gracious answer ¹¹²It is graciously given. In a few days the lord lieutenant made a only speech to both houses; in which he informed them, received. that, by the magnanimity of the king, and wisdom of the British parliament, he was enabled to assure them, that immediate attention had been paid to their representations, and that the legislature of Britain had concurred in a resolution to remove the causes of their discontents, and were united in a desire to gratify every wish expressed in the late address to the throne; and that, in the mean time, his majesty was graciously disposed to give his royal assent to acts to prevent the suppressing of bills in the Irish privy council, and to limit the mutiny-bill to the term of two years.

The joy which now diffused itself all over the king- ¹¹³Extreme joy of the
dom was extreme. The warmest addresses were pre- sented not only to his majesty but to the lord lieutenant. The commons instantly voted 100,000 l. to his majesty, to enable him to raise 20,000 men for the navy; and soon after, 5000 men were likewise voted from the Irish establishment. The volunteers became in a peculiar manner the objects of gratitude and universal panegyric; but none was placed in so conspicuous a light as Mr Grattan. Addresses of thanks flowed in upon him from all quarters; and the commons ¹¹⁴Mr Grattan re-
addressed his majesty to give him 50,000 l. as a re- compense of his services; for which they promised to make provision. ward.

This request was also complied with; but still the ¹¹⁵Jealousies
jealousies of the Irish were not completely eradicated. As the intended repeal of the declaratory act was found to be simple, without any clause expressly relinquishing the claim of right, several members of the house of commons ^{begin to revive.}

Ireland.

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Equivocal
conduct of
Britain.

commoners were of opinion, that the liberties of Ireland were not yet thoroughly secured. The majority, however, were of opinion, that the simple repeal of the obnoxious act was sufficient; but many of the nation at large differed in sentiments. Mr Flood, a member of the house, and a zealous patriot, now took the lead in this matter; while Mr Grattan lost much of his popularity by espousing the contrary opinion. The matter, however, was to appearance finally settled by the volunteers, who declared themselves on Mr Grattan's side. Still some murmurings were heard; and it must be owned, that even yet the conduct of Britain appeared equivocal. An English law was passed, *permitting* importation from one of the West India islands to all his majesty's dominions; and of course including Ireland, though the trade of the latter had already been declared absolutely free. This was looked upon in a very unfavourable light. Great offence was also taken at a member of the English house of lords for a speech in parliament, in which he asserted, that Great Britain had a right to bind Ireland in matters of an external nature; and proposed to bring in a bill for that purpose. The public discontent was also greatly inflamed by some circumstances relating to this bill, which were particularly obnoxious. Lord Beauchamp, in a letter addressed to one of the volunteer corps, was at pains to show that the security of the legislative privileges obtained from the parliament of Britain was insufficient. The lawyers corps also, who took the question into consideration, were of the same opinion; but the circumstance which gave the greatest offence was, that the chief justice in the English court of king's bench gave judgment in an Irish cause directly contrary to a law which had limited all such judgments to the first of June. All these reasons of discontent, however, were removed on the death of the marquis of Rockingham, and the appointment of the new ministry who succeeded him. Lord Temple came over to Ireland, and his brother and secretary Mr Grenville went to England, where he made such representations of the discontents which prevailed concerning the insufficiency of the declaratory act, that Mr Townshend, one of the secretaries of state, moved in the house of commons for leave to bring in a bill to remove from the minds of the people of Ireland all doubts respecting their legislative and judicial privileges. This bill contained, in the fullest and most express terms, a relinquishment on the part of the British legislature of all claims of a right to interfere with the judgment of the Irish courts, or to make laws to bind Ireland in time to come. Thus the contest was at last ended; and ever since this kingdom has continued to flourish, and to enjoy the blessings of tranquillity and peace, free from every kind of restriction either on its commerce or manufactures.

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Affairs
finally settled under
the administration of
Lord Temple.118
Climate
&c. of Ireland.

The climate of Ireland would almost perfectly agree with that of England, were the soil equally improved, being abundantly fruitful both in corn and grass, especially the latter; in consequence of which, an infinite number of black cattle and sheep are bred, particularly in the province of Connaught. Few countries produce finer grain than that which grows in the improved parts of this kingdom. The northern and eastern counties are best cultivated and inclosed, and the most populous.

Ireland is known to have many rich mines; and

there is no inconsiderable prospect of gold and silver in some parts of the kingdom. No country in the world abounds more in beautiful lakes, both fresh and salt water ones; and it is also plentifully watered with many beautiful rivers. The commodities which Ireland exports, as far as her present trade will permit, are hides, tallow, beef, butter, cheese, honey, wax, hemp, metals, and fish: wool and glass were, till December 23. 1779, prohibited; but her linen trade is of late grown of very great consequence. England, in the whole, is thought to gain yearly by Ireland upwards of 1,400,000*l.* and in many other respects she must be of very great advantage to that kingdom. Formerly, indeed, she was rather a burden to her elder sister than any benefit; but the times are changed now, and improve every day.

Mr O'Halloran says, the linen manufacture was carried on in Ireland in very early days to a great extent; and Gratianus Lucius quotes a description of the kingdom, printed at Leyden in 1627; in which the author tells us, "That this country abounds with flax, which is sent ready spun in large quantities to foreign nations. Formerly (says he) they wove great quantities of linen, which was mostly consumed at home, the natives requiring above 30 yards of linen in a shirt or shift." So truly expensive was the Irish fashion of making up shirts, on account of the number of plaits and folds, that, in the reign of Henry VIII. a statute passed, by which they were forbidden, under a severe penalty, to put more than seven yards of linen in a shirt or shift.

We may form some idea of what the trade of Ireland must have been in former times, when, so late as the reign of Brien Boru, who died in 1014, notwithstanding the ravages and distresses which a Danish war, of above 200 years continuance, must have produced throughout the kingdom, the annual duties arising from goods imported into the single port of Limerick, and paid in red wine, amounted to 365 pipes! Even so lately as the last century, it is scarcely credible what riches this city derived from the bare manufacture of shoes, which were exported in amazing quantities; whereas now, instead of shoes and boots, we see the raw hides shipped off for foreign markets.

No country in the world seems better situated for a maritime power than Ireland, where the ports are convenient to every nation in Europe, and the havens safe and commodious. The great plenty of timber, the superior excellence of the oak, and the acknowledged skill of her ancient artificers in wood-works, are circumstances clearly in her favour. That the Irish formerly exported large quantities of timber, is manifest from the churches of Gloucester, Westminster-monastery and palace, &c. being covered with Irish oak.

The government of the kingdom is in the hands of a viceroy, or lord-lieutenant, who lives in very great splendour. In his absence there are lords-justices (styled their *excellencies*), generally three in number, viz. lord primate, lord high chancellor, and the speaker of the house of commons. The parliament of Ireland meet every other winter, or oftener, according to exigencies.

Ireland is divided into four large provinces, and those again into 32 countries, as follows:

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Linen manufacture
early introduced.120
Government,
population, &c.

I. U. L.

Ireland.

Ireland.

I. ULSTER.

Counties.	Houses.	Extent, &c.
1. Antrim	20738	Length 68 } miles { 460 cir-
2. Armagh	13125	Breadth 98 } cumfer.
3. Cavan	9268	Irish plantations.
4. Down	26090	Acres, 2836837 4496205
5. Donnegal	12357	Parishes, 365 [English
6. Fermanagh	5674	Boroughs, 29
7. Londonderry	14527	Baronies, 55
8. Monaghan	26637	Archbishop. 1
9. Tyrone	16545	Bishoprics, 6
		Market-towns, 58

II. LEINSTER.

1. Caterlogh, or Car-low	Leng. 104 } miles { 360 cir-
	5444 Bread. 55 } cumf.
2. Dublin	24145 I. acr. 2642958, or 4281155
3. Kildare	8887 Parishes, 858 [English
4. Kilkenny	3231 Boroughs, 53
5. King's county	9294 Baronies, 99
6. Longford	6057 Market-towns, 63
7. Lowth	8150 Archbishopric, 1
8. Meath (East)	14000 Bishoprics, 3
9. Queen's county	The rivers are, the Boyne, Barrow, Liffy, Noir, and the May.
10. Westmeath	9621
11. Wexford	13015
12. Wicklow	7781

III. MUNSTER.

1. Clare	11381 Leng. 100 } miles { 600 cir-
2. Cork	47334 Bread. 107 } cumf.
3. Kerry	11653 Acres 3289932, 5329146
4. Limerick	19380 Parishes, 740 [English
5. Tipperary	18325 Boroughs, 26
6. Waterford	9485 Baronies, 63
	Houses, 117197
	Archbishopric, 1
	Bishops, 6

IV. CONNAUGHT.

1. Galway	15576 Leng. 90 } miles { 500 cir-
	Bread. 80 } cumfer.
2. Leitrim	5156 Acres, 2272915, 3681746
	Parishes, 330 [English
3. Mayo	15089 Boroughs, 10
	Baronies, 43
4. Roscommon	8780 Archbishopric, 1
	Bishop. 1
5. Sligo	5970 Houses, 49966
	Rivers are the Shannon, May, Suck, and Gyll.

In 1731, while the duke of Dorset was lord-lieutenant, the inhabitants were numbered, and it was found that the four provinces contained as follows:

Connaught	21604	Protestants {	221780	Papists {
Leinster	203087		447916	
Munster	115130		482044	
Ulster	360632		158020	
	700453		1309768	

There are 44 charter working-schools at present in Ireland, wherein 2025 boys and girls are maintained

and educated. These schools are maintained by an annual bounty of 1000 l. by a tax upon hawkers and pedlars, and by subscriptions and legacies. The children admitted are those born of Popish parents, or such as would be bred Papists if neglected, and are found of limbs. Their age must be from six to ten; the boys at 16, and the girls at 14, are apprenticed into Protestant families. The first school was opened in 1734. Five pounds are given to every person educated in these schools upon his or her marrying a Protestant. An English act of parliament, lately tolerated the Catholic religion in Ireland, and by that means has relieved thousands of useful subjects.

The return of houses in Ireland for the year 1754, was 395,439; and for the year 1766, it was 424,046. Supposing therefore the numbers to have increased at the same rate, the number of houses now cannot be less than 454,130; which, allowing five persons to a family, will make the number of inhabitants 2,260,650: but as the return of houses by hearth-collectors is rather under than above the truth, and as there are many families in every parish who are by law excused from that tax, and therefore not returned, the number on a moderate estimate will be 2,500,000. Sir W. Petty reckoned 160,000 cabins without a chimney; and if there be an equal number of such houses now, the number of people will be above 3,000,000. Mr Molyneux says, "Ireland has certainly been better inhabited formerly; for on the wild mountains between Ardmach and Dundalk, are observable the marks of the plough, as they are also on the mountains of Altmore. The same has been observed in the counties of Londonderry and Donnegal. Mountains that are now covered with bogs have been formerly ploughed; for when you dig five or six feet deep, you discover a proper soil for vegetation, and find it ploughed into ridges and furrows: a plough was found in a very dead bog near Donnegal; and an hedge, with some wattles, standing under a bog that was five or six feet in depth. The stump of a large tree was found in a bog ten feet deep at Castle-Forbes; the trunk had been burnt, and some of the cinders and ashes still were lying on the stump. Mr Molyneux further says, that on the top of an high mountain, in the north, there were then remaining the streets and other marks of a large town.

Beauty seems to be more diffused in England, among the lower ranks of life, than in Ireland; which may, however, be attributed to the mere modes of living. In England, the meanest cottager is better fed, better lodged, and better dressed, than the most opulent farmers here, who, unaccustomed to what our peasants reckon the comforts of life, know no luxury but in deep potations of aquavitz.

From this circumstance, we may account for a fact reported by the officers of the army here. They say, that the young fellows of Ireland, who offer to enlist, are more generally below the given height than in England. There can be no appeal from their testimony; for they were Irish, and the standard is an infallible test. No reason, indeed, can be given why the causes which promote or prevent the growth of other animals, should not have similar effects upon the human species. In England, where there is no stint of provisions, the growth is not checked; but, on the contrary, it is extended to the utmost bound of nature's.

Ireland.

ture's original intention : whereas, in Ireland, where food is neither in the same quantity nor of the same quality, the body cannot expand itself, but is dwarfed and stunted in its dimensions. The gentlemen of Ireland are full as tall as those of England ; the difference, then, between them and the commonalty, can only proceed from the difference of food.

The inhabitants, in general, of this kingdom, are very far from what they have too often and unjustly been represented by those of our country who never saw them, a nation of wild Irish. Miserable and oppressed, as by far too many of them are, an Englishman will find as much civility in general, as amongst the same class in his own country ; and, for a small pecuniary consideration, they will exert themselves to please you as much as any people, perhaps, in the king's dominions. Poverty and oppression will naturally make mankind sour, rude, and unsociable, and eradicate, or at least suppress, all the more amiable principles and passions of humanity. But it should seem unfair and ungenerous to judge of, or decide against, the natural disposition of a man reduced by indigence and oppression almost to desperation. Let commerce, agriculture, and arts, but call forth the dormant activity of their genius, and rouse the native spirit of enterprize, which now lies torpid within them ; let liberal laws unfetter their minds, and plenty cheer their tables ; they will soon show themselves deserving to rank with the most respectable societies in Europe.

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Account of
the bogs in
Ireland.

The bogs wherewith Ireland is in some places overgrown, are not injurious to health, as is commonly imagined ; the watery exhalations from these are neither so abundant nor so noxious as those from marshes, which become prejudicial from the various animal and vegetable substances which are left to putrify as soon as the waters are exhaled by the sun. Bogs are not, as one might suppose from their blackness, masses of putrefaction ; but, on the contrary, they are of such a texture, as to resist putrefaction above any other substance we know of. A shoe, all of one piece of leather, very neatly stitched, was taken out of a bog some years ago, yet entirely fresh ;—from the very fashion of which, there is scarce room to doubt that it had lain there some centuries. Butter, called *rouskin*, hath been found in hollowed trunks of trees, where it had been hid so long, that it was become hard and almost friable, yet not devoid of unctuousity ; that the length of time it had been buried was very great, we learn from the depth of the bog, which was ten feet, that had grown over it. But the common phenomenon of timber-trees dug out of these bogs not only sound, but also so embalmed as afterwards to defy the injuries of time, demonstrate the antiseptic quality of them. The horns of the moose-deer must have lain many centuries in a bog ; for the Irish histories do not recognize the existence of the animal whereon they grew. Indeed, human bodies have, in many places, been dug up entire, which must have lain there for ages. The growth of bogs, however, is variable in different places, from the variety of conditions in the situation, soil, humidity, and quantity of vegetable food ; in some places it is very rapid, in others very slow ; and therefore their altitudes cannot afford any certain measure of time. In the manufacturing countries of the north, peat-fuel has become so scarce, that

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turburies let from five to eight guineas an acre. In some places they are so eradicated, there does not remain a trace of them, the ground being now converted into rich meadows and sweet pastures.

If we trust to authorities, we must conclude that Ireland was not originally inferior to England, either in the fertility of the soil or salubrity of the climate. When this country shall have felt the happy effects of the late concessions and indulgencies of the British parliament, by repealing several acts which restrained the trade of this kingdom with foreign ports, and allowing the exportation of woollen manufactures and glass, and shall have received further indulgencies from the same authority ; and when the spirit of industry shall be infused, in consequence of it, into the common people ; their country will not be inferior to any other on the globe under the same parallel. It is very difficult to say, whether foreign or domestic causes have operated most powerfully in laying waste this fruitful country ; which, by being relieved from their late unnatural prohibitions, will be enabled to furnish a grand proportion of supplies to Great Britain, and will unavoidably become of vast importance, by its reciprocal trade, in restraining the increase of that of France, who cannot carry on this important branch of traffic without the assistance of Irish wool. The wool of France is short and coarse, being, in the language of the manufacturers, neither fine in the thread nor long in the staple. This obliges them to have recourse to the wool of Ireland, which possesses both these qualities. Assisted by a pack of Irish wool, the French are enabled to manufacture two of their own ; which they will no longer be enabled to procure, as the Irish will now work up their own wool which they used to export ; great part of which found its way to France, and enabled them to supply other markets, to the great prejudice of Britain. The happy effects of it have been already felt ; for notwithstanding it was so late as December 23. 1789, that the royal assent was given to the taking off their restraints on woollen exports, it appears, that on January 10th following, an export-entry was made at the custom-house of Dublin of 1300 yards of serge for a foreign market, by William Worthington, Esq.

IRENÆUS (St.), a bishop of Lyons, was born in Greece about the year 120. He was the disciple of Pappias and St Polycarp, by whom, it is said, he was sent into Gaul in 157. He stopped at Lyons, where he performed the office of a priest ; and in 178 was sent to Rome, where he disputed with Valentinus, and his two disciples Florinus and Blastus. At his return to Lyons, he succeeded Photinus, bishop of that city ; and suffered martyrdom in 201, under the reign of Severus. He wrote many works in Greek, of which there only remains a barbarous Latin version of his five books against heretics, some Greek fragments in different authors, and pope Victor's letter mentioned by Eusebius. The best editions of his works are those of Erasmus, in 1526 ; of Grabe, in 1702 ; and of Father Maffuet, in 1710. St Irenæus's style is close, clear, and strong, but plain and simple. Dodwell has composed six curious dissertations on the works of St Irenæus.

He ought not to be confounded with St Irenæus the deacon, who in 275 suffered martyrdom in Tuscany,

5

under

Irons
Iris

under the reign of Aurelian; nor with St Iræneus, bishop of Sirmich, who suffered martyrdom on the 25th of March 304, during the persecution of Diocletian and Maximianus.

IRENE, empress of the east, celebrated for her valour, wit, and beauty; but detestable for her cruelty, having sacrificed her own son to the ambition of reigning alone. She died in 803.

IRENE, in botany: A genus of the pentandria order, belonging to the dioecia class of plants; and in the natural method ranking under the 54th order, *Miscellanea*. The male calyx is diphyllous, the corolla pentapetalous; and there are five nectaria. The female calyx is diphyllous, the corolla pentapetalous; there are two sessile stigmata, and a capsule with fleshy seeds.

IRIS, in physiology, the rainbow. The word is Greek, *ἵρις*, supposed by some to be derived from *ἵρημι* "I speak, I tell;" as being a meteor that is supposed to foretell, or rather to declare rain. See RAINBOW.

Lunar Iris, or Moon-rainbow. See RAINBOW (Lunar).

IRIS, in anatomy, a striped variegated circle round the pupil of the eye, formed of a duplicature of the uvea. See ANATOMY, p. 767.

IRIS is also applied to those changeable colours which sometimes appear in the glasses of telescopes, microscopes, &c. so called from their similitude to a rainbow. The same appellation is also given to that coloured spectrum, which a triangular prismatic glass will project on a wall, when placed at a due angle in the sun-beams.

IRIS, the *Flower de Luce*, or Flag-flower, &c. in botany: A genus of the monogynia order, belonging to the triandria class of plants; and in the natural method ranking under the sixth order, *Enfate*. The corolla is divided into six parts; the petals alternately reflexed; the stigmata resembling petals.

There are 44 species, all herbaceous flowering perennials, both of the fibrous, tuberous, and bulbous rooted kind, producing thick annual stalks from 3 or 4 inches to a yard high, terminated by large hexapetalous flowers, having three of the petals reflexed quite back and three erect; most of which are very ornamental, appearing in May, June, and July.

Culture. All the species are easily propagated by offsets from the roots, which should be planted in September, October, or November, though almost any time from September to March will do. They may also be raised from seed, which is the best method for procuring varieties. It is to be sown in autumn, soon after it ripens, in a bed or border of common earth, and raked in. The plants will rise in the spring, and are to be transplanted next autumn.

Properties. The roots of the Florentine white iris, when dry, are supposed to have a pectoral virtue. They have an agreeable smell, resembling that of violets; and hence are used in perfumes, and in flavouring of liquors. When recent, they have a bitter, acrid, nauseous taste; and when taken into the body, prove strongly cathartic; on which account they have been recommended in dropsies, in the dose of three or four scruples. — The juice of the species called *bastard acorus*, or *yellow flag-flower*, is also very acrid, and hath been found to produce plentiful evacuations from the

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bowels when other means had failed. For this purpose, it may be given in doses of 80 drops every hour or two; but the degree of its acrimony is so uncertain, that it can hardly ever come into general use. The fresh roots have been mixed with the food of swine bitten by a mad dog, and they escaped the disease, when others, bitten by the same dog, died raving mad. Goats eat the leaves when fresh; but cows, horses, and swine, refuse them. Cows will eat them when dry. The roots are used in the island of Jura for dying black. — The roots or bulbs of a species growing at the Cape, are roasted in the ashes and used as food by the natives: they are called *oenkjes*, and have nearly the same taste with potatoes. The Hottentots, with more reflection than generally falls to the share of savages, use the word *oenkjes* in the same sense in which Virgil used that of *arista*, that is, for reckoning of time; always beginning the new year whenever the *oenkjes* push out of the ground, and marking their age and other events by the number of times in which in a certain period this vegetable has made its appearance. — The Siberians cure the venereal disease by a decoction of the root of the *Iris Sibirica*, which acts by purging and vomiting. They keep the patient eight days in a stove, and place him in a bed of the leaves of the *arctium lappa*, or common burdock, which they frequently change till the cure is effected.

Iris-Stone. See *Moon-Stone*.

IRON, one of the imperfect metals, but the hardest and most useful as well as the most plentiful of them all, is of a livid whitish colour inclining to grey, and internally composed to appearance of small facets; susceptible of a fine polish, and capable of having its hardness more increased or diminished by certain chemical processes than any other metal.

It is very generally diffused throughout the globe, being frequently found mixed with sand, clay, chalk, and being likewise the colouring matter of a great number of stones and earth. It is found also in the ashes of vegetables, and in the blood of animals, in such abundance, that some authors have attributed both the colours of vegetables and of the vital fluid itself to the iron contained in them. In consequence of this abundance the iron ores are extremely numerous.

1. Native iron, formerly thought not to have an existence any where, is now certainly known to have been met with in several places. It is, however, by no means common, but occurs sometimes in iron mines. Margraaf found a fibrous kind of it at Eibenstock in Saxony, and Dr Pallas found a mass in Siberia weighing 1600 pounds. Mr Adanson likewise informs us, that native iron is common about Senegal; but some naturalists are of opinion that these pieces which have been taken for native iron, are in reality artificial, and have been accidentally buried in the earth. The large piece mentioned by Dr Pallas is of that species called *red-short*, which is malleable when cold, but brittle when red hot. — A mass of a similar nature is said to have been lately found in South America.

This American mass of iron was discovered by some Indians in the district of Santiago del Estero in the midst of a wide extended plain. It projected about a foot above the ground, and almost the whole of its upper surface was visible; and the news of its being found in a country where there are no mountains, nor

Iris,
Iron.

Diffused al-
 most all
 over the
 globe.

Found na-
 tive in Si-
 beria, Se-
 negal, &c.

Phil. Transf.
 vol. 78.

X x

even

Iron.

even the smallest stone within a circumference of 100 leagues, could not but be very surprising. Though the journey was attended with great danger on account of the want of water, and abundance of wild beasts in these deserts, some private persons, in hopes of gain, undertook to visit this mass; and having accomplished their journey, sent a specimen of the metal to Lima and Madrid, where it was found to be very pure soft iron.

As it was reported that this mass was only the extremity of an immense vein of the metal, a commission was given to Don Michael Rubin de Celis to examine the spot; and the following is an abstract of his account.

"The place is called *Otumpa*, in lat. 27. 28. S. and the mass was found almost buried in pure clay and ashes. Externally it had the appearance of very compact iron; but internally was full of cavities, as if the whole had been formerly in a liquid state. I was confirmed in this idea (says our author), by observing, on the surface of it, the impression of human feet and hands of a large size, as well as of the feet of large birds, which are common in this country. Though these impressions seem very perfect, yet I am persuaded that they are either a *lusus nature*, or that impressions of this kind were previously upon the ground, and that the liquid mass of iron falling upon it received them. It resembled nothing so much as a mass of dough; which having been stamped with impressions of hands and feet, and marked with a finger, had afterwards been converted into iron.

"On digging round the mass, the under surface was found covered with a coat of scoriz from four to six inches thick, undoubtedly occasioned by the moisture of the earth, because the upper surface was clean. No appearance of generation was observed in the earth below or round it to a great distance. About two leagues to the eastward is a brackish mineral spring, the only one to be met with in all the country. Here there was a very gentle ascent of between four and six feet in height, running from north to south; all the rest being as perfect a level as can be imagined. The earth in every part about this spring, as well as near the mass, is very light, loose, and greatly resembling ashes even in colour. The grass of the adjacent parts is very short, small, and extremely unpalatable to cattle; but that at a distance is long and extremely grateful to them: from all which circumstances it is probable that this mass was produced by a volcanic explosion. Its weight might be estimated at about 300 quintals.—It is likewise an undoubted fact, that in these forests there exists a mass of pure iron in the shape of a tree with its branches. At a little depth in the earth are found stones of quartz of a beautiful red colour, which the honey-gatherers, the only persons who frequent this country, make use of as flints to light their fires. They had formerly carried some of them away on account of their peculiar beauty, being spotted and fludded as it were with gold. One of these, weighing about an ounce, was ground by the governor of the district, who extracted from it a drachm of gold."

The native iron said to have been found about Senegal has a cubical form; and out of this the black inhabitants make different kinds of vessels for their own use. Some masses have been found in a polyhe-

dral granulated form, and of a bright yellow colour; but which, on being polished, show the proper colour of the metal. Mr Bergman informs us, that the great mass of native metal found in Siberia resembles forged iron in its composition, a centenary, or 63 grains, yielding 49 cubic inches of inflammable air; and from many experiments it appears, that ductile iron yields from 48 to 51 cubic inches of the same kind of air. Dr Matthew Guthrie informs us, that "the pores of this iron were filled with a yellow vitreous matter, of such hardness as to cut glass." The cells are lined with a kind of varnish contiguous to the glassy substance within.

2. The *calcsform ores* are either composed of the *Calcsform*; blackish, blackish-brown, or red calx of the metal; the former being in some measure magnetic, in consequence of the phlogiston it contains; the latter showing nothing of this property until it be roasted.

The name of *calcsform* may be applied to all the ores of this metal, excepting the native iron already mentioned, and the native Prussian blues, of which we shall afterwards treat. All of them are mixed with different minerals, and generally take their colour from that of the calx of iron which is prevalent in them. Mr Kirwan enumerates a great many different species.

3. *Steel ore*, *Stachlers*, the *ferrum chalybeatum* ⁴Steel ore; *Linnaei*, and *minera ferri nigra* of *Cronstedt*. This is of a dark colour, solid, and compact, but with difficulty striking fire with steel; reducible to a black powder, obedient to the magnet, and somewhat malleable when red hot; affording from 60 to 80 per cent. of good iron. It is met with in Sweden, the Isle of Elbe, and North America. The *ferrum tessulare* and *minera ferri crystallizata* of Wallerius, belongs to this species, but is somewhat less magnetic. Our author denominates it crystallized iron ore in an octohedral or cubic form.

4. The *magnet*, according to Fourcroy, is a muddy ⁵Magnet iron ore, which, however, some authors suppose to be very near the metallic state. Mr Kirwan says it differs but little from the foregoing, only that it has less lustre. There are two kinds, the fine and the coarse grained, of which the latter lose their power the soonest. When heated red hot, it smells of sulphur. Our author thinks it may contain nickel, as this semi-metal is found to possess a magnetic property when purified to a certain degree.

5. The brown calx of iron combined with plumbago, ⁷Brown ore, *black eisen glimmer*, *schwartz*, *eisen haben* or *eisenman*, consists of black shining scales more or less magnetic, affording, according to Mr Rinman, 26 per cent. of iron, the rest being plumbago.

6. The brown calx of iron united with the white ⁸White calx of manganese, and mild calcareous earth in various proportions. These constitute the white ores of iron, on which Mr Bergman has given a dissertation.—"They have received (says he) divers denominations from the singular heat with which they are accompanied. Their texture is almost the same with that of the calcareous stone, yet it is rarely found compact, and composed of impalpable particles. It is sometimes squamous, sometimes granulated with small distinct particles, some of them shining, but in general spathous. This description, however, is not meant for their complete and perfect state; for the figure of their parts is more or less destroyed by spontaneous calcination;

Iron. tion; nay, the whole mass is at length resolved into a powder: sometimes it is found stalaclitic, fistulous and ramous, cellular, or even germinating like moss. Sometimes, though very seldom, they have sufficient hardness to strike fire with steel; but though, when found mixed with flint and newly dug up, they are of this kind, yet they soon lose the property we speak of. When perfect, they generally resemble the calcareous stone, unless when exposed for some time to the air, by which the union of their parts are gradually diminished. Their colour is white, but the surface which comes into contact with the air grows gradually brown, or even blackish; yet as long as the iron which is converted into an ochre remains in them, they have a ferruginous hue; but though the surface is thus changed, the internal parts remain the same, and, on being filed or broken, exhibit the natural colour. — This change is effected by the air, not upon the iron, as is commonly believed, but on the white calx of manganese which is dephlogisticated by the atmosphere.

“ The specific gravity of the ore, when perfect, varies between 3,640 and 3,810, and is diminished according to the degree of calcination. The ore whose particles are quite separated is from 2.5 to 2.9; but that which is not perfectly corroded, from 3.3 to 3.6. It is rarely attracted by the magnet, whether perfect or calcined, though the metallic part sometimes amounts to nearly one half the weight.

9 A mountain of iron ore in Dalecarlia in Sweden. The white ores of iron are found, though in very small quantity, in Sweden. The *Suuri-begger*, or *Black Mountain*, in Dalecarlia, has its name from its surface, which is grown black by calcination. It is high, and naked on the summit, which is crossed by a broad calcareous vein with shining particles of spar, and a white ore of iron, together with a galena, pseudogalena, black ore of iron, pyrites, schoerl, and garnet intermixed. In the old mines at Hallefora, or the eastern mines, the rock itself appears to consist of a white ore of iron; but in other places it is either found in small quantity, or very poor in metal. Many mountains about Smialkald in Germany contain these ores. In one called *Stahlbagger*, a broad vein occurs almost horizontal, and from 25 to 30 fathoms thick. It consists of an irregular spar, in which are dispersed quartz and pieces of the ore, which are found of a better quality in proportion as they are more deeply seated. The uppermost side, which is pendant, consists of a sandy stone from 9 to 20 fathom high; but the lower is margaceous, and is found more indurated towards the lower parts; and at the very lowest is extended by a blue mica: the sides scarcely cohere to the vein. The whole mountain in Nauffavia consists of a yellowish ore of iron, certain veins of which are accompanied with copper, and others with hematites. The hill of *Arzberg*, situated at Eisenartz in Upper Silesia, is 6000 fathoms in circuit, 900 in diameter, and 450 in height. According to some accounts the ore is irregularly accumulated and concreted, consisting of masses of quartz charged with argillaceous earth and white ore of iron; but, according to others, the ore is found there not only in heaps, but in various veins.”

This ore, when analysed, gave 38 parts of the brown calx of iron, 24 of the white calx of manganese, and 50 of mild calcareous earth. Another from West Silvathreg, yielded 22 of the brown calx of iron,

28 of the white calx of manganese, and 50 of mild calcareous earth. The aerial acid is used, and is united not only to the earth, but also to the metallic calx. The above proportions of the crude materials in the ore of Eisenartz, would yield, according to Mr Kirwan, 38 parts of calcareous earth, 38 of iron in its metallic state, and 24 of manganese. Many others are poorer, and some to such a degree as scarcely to deserve the name of an ore. They abound also in France and Spain, and are found sometimes in heaps, sometimes also forming veins, strata, or even whole mountains. Mr Bergman never found them contain any organized bodies; a mark (says he) by which the most ancient productions of the earth have been distinguished. When this iron ore bears a stalaclitic appearance, and is very white, it is called *flos ferri*, and *eisen bluth*. An hundred parts of it yield 65 of calcareous earth, and 35 of calx of iron; which, according to Rinman, produce 27 of iron in its metallic state.

7. Magnetic sand. Of this kind is the black sand of Virginia, whose specific gravity is about 4.600, and contains half its weight of metal. so
Black sand of Virginia.

From an account inserted in the Philosophical Transactions for 1763, we are informed, that there are very large quantities of this sand-iron ore in Virginia; perhaps as large as of any other kinds of iron-ore. It is so pure, that it requires a mixture of bog-ore, or of slags from other smeltings, to reduce it to a metallic form. The iron and steel produced from it were above 60 per cent. or from 50 to 85; the quality of both extremely good; and two small bars were sent as a sample to the museum of the Royal Society of London. Large strata of black sand-iron-ore are found in Portugal, even at a considerable distance from the sea-shore, or from any running waters. A very great part of this black sand is attracted by the magnet. There is also found, particularly in France, a black, heavy, unmagnetic sand, of the siliceous kind, which is said to contain iron and zinc in great quantity. Mr Kirwan, p. 143. of his Mineralogy, speaks of a siliceous sand consolidated by semiphlogisticated calx of iron, which does not crumble into sand when powdered. It is generally of a black or brown colour; but grows reddish or yellowish, and moulders by exposure to the air. It does not effervesce with acids, unless it contains testaceous particles, which is frequently the case; it is even frequently covered with shells. He adds, that the agglutinating power of solutions of iron has been shown by a stony concretion of this sort that had been long buried in the sea, and is mentioned in a paper of Mr Edward King in the Philosophical Transactions for 1779. Mr Rinman, however, has found that dephlogisticated calces of iron, and particularly its solutions in mineral acids, have no binding power.

8. Red calx of iron indurated and combined with a small quantity of clay, frequently with manganese. — 21
Indurated red ore. Fourcroy calls this a muddy iron-ore, which seems to be formed in the manner of stalaclites, and deriving its name from its colour, which is commonly red, or the colour of blood, though not without variations. Mr Kirwan says, that “it is generally of a red, yellow, purple, or brown colour, of a metallic lustre, and very hard, though seldom capable of giving fire with steel.” Fourcroy tells us, that it is usually composed of layers which cover each other, and are themselves formed of

Iron.

convergent needles, the external part being covered with tubercles; and that it is not only distinguished by the colour, but by the form, as the hæmatites botrytes, in the form of bunches of grapes. Mr Kirwan tells us, that its structure is either solid, granular, scaly, or fibrous; that it occurs in shapeless masses, in a stalactitical form; or, according to Gmelin, crystallized in regular forms, though M. de Lisle denies this. In some places it forms whole mountains, and affords from 40 to 80 per cent. of iron. Mr Gerhard extracted alum from it, which affords a proof of its containing clay; and Mr Hilan found it also to contain manganese. In its natural state it is not affected by the magnet; but by torrefaction it becomes black and magnetic.

12
Ochres of
different
kinds.

9. Hæmatitical, red, yellow, and brown ochres. These are, by Mr Kirwan, intitled "hæmatites in a loose form, mixed with a notable proportion of argill" (clay.) They are distinguished, he says, from clays, by containing a larger proportion of martial particles. To this species belong the ores which become brown by calcination, and likewise magnetic. They are sometimes mixed with clay or calcareous earths; in which case these ores effervesce with acids. The hæmatites, or blood stones, have their names, not on account of their external colours, but because, when reduced to powder, they produce a red or blood-colour. The yellow hæmatites, however, only produce the same colour by pulverisation. They are productive of very good iron, and are found in great abundance in the province of Galiza in Spain. The inhabitants of Compostella, the capital, make a good commerce of these hæmatites of the hardest kind for the burnishing gold leaves, and various other metals. A dark blue kind, somewhat similar to black-lead, is principally employed for these purposes. They are found in many parts of Europe, sometimes forming whole mountains. The most extraordinary ores of this kind, both on account of their forms and of their various and brilliant colours, are found in the island of Elba near the coast of Tuscany. The crystallized ores are here the most beautiful and the most common, though not to be met with any where else. They exhibit various gradations of the finest colours, as red, violet, blue, green, yellow, brown, and black; inasmuch that, according to Coudrai's expression, they look like so many clusters of emeralds, sapphires, diamonds, rubies, and topazes. E. Peni and Mongez affirm, that these ores are mineralized only by the aerial acid; tho' Coudrai is of opinion, that they contain sulphur also. Besides these beautiful crystallized ores, this island contains also many others; being indeed little other than a group of iron-mountains. The ores in general produce the very best kind of iron.

13
Emery.

10. *Emery, smyris*, is a grey or reddish iron-ore found in great quantity on the islands of Jersey and Guernsey. It is extremely hard, yielding in this respect to no substance except the diamond itself. It is also very refractory, and for these reasons is not used for the sake of the metal it contains, nor indeed is it well known what proportion is contained in it. "The best sort (says Mr Kirwan) is of a dark grey colour, but becomes brown, and in great measure magnetic, by calcination: other sorts are of a rusty reddish white or yellowish colour. Its specific gravity is from 3.000 to

4.000. It is used in polishing glass and metals; for which purpose it must first be ground down and levigated in mills.

Iron.

11. The *argillaceous ores*. These comprehend the ochres, and more particularly those mentioned by Fourcroy under the name of *bog-ores* of iron, which are commonly met with disposed in beds, and seemingly deposited by waters. Mr Fourcroy informs us, that this kind of ore is very often in the form of spherical bodies either regular or irregular. Organic matters, such as wood, leaves, bark, shells, &c. are not unfrequently found in the state of bog-ores. This kind of transition seems to indicate an analogy betwixt iron and organic substances. In the wood of Boulogne near Auteuil there is a mine of bog-ore of iron, in which vegetable substances become mineralized almost immediately under our eyes.

Mr Kirwan distinguishes two principal varieties of these; one found on mountains, and such as are met with in swampy grounds or low lands overflowed with water; both of them very heavy, and some absorbing water like clays.

The Highland argillaceous ochres are either yellow, red, brown, or greyish, indurated and friable, or loose and powdery, or in grains; they are composed chiefly of the red or yellow calx of iron, or of a grey iron ore called *Torsten*, in a loose form mixed with clay. Hence they often contain manganese or siderite, and in France are said to be mixed with a calx of zinc. They do not obey the magnet before calcination, and rarely after it. They effervesce with acids only in consequence of being mixed with calcareous earths; they are soluble with difficulty in the acids, but the most soluble are the best. The iron produced from them is of very different quality, according to the nature of the ore from whence it is produced. To this species belong the hornstone overloaded with iron, and a white iron ore mentioned by Rinman found in Kent. It is mixed with clay or marl, and is scarcely soluble in acids. It affords 47 per cent. of brittle iron.

The swampy argillaceous ore, according to Mr Kirwan, are found in irregular lumps of a brown or brownish-black, and sometimes in round balls, porous or solid, or in flat round pieces or in grains, and sometimes in slender triangular prisms parallel to each other, and very brittle. It is mixed with clay and extractive, and becomes magnetic by calcination; during which operation it gives out a quantity of aerated volatile alkali, and loses one-fourth of its weight. The crude ore affords about 36 per cent. of metal, and 50 per cent. after calcination. The iron produced from it, at least in Sweden, is that called *coldbort*. According to Mr Hialm some sorts of this ore contain 28 per cent. of manganese.

12. *Red calcareous iron ore* is found loose in many parts of England, effervesces strongly with acids, and is used as a paint under the name of red ochre.

13. *Martial calamine*. Though calamine is properly an ore of zinc, it sometimes contains such a large proportion of iron as to make it worth while to extract the iron. The ore consists of a mixture of quartz and clay, with the calces of iron and zinc. It is of a moderate hardness, and a yellow, red, or brown colour.

14. *Martial pyrites*. This has its name from its property of giving fire with steel. It is commonly in small

14
Bog ores,
&c.

15
Highland
argillaceous
ores.

16

Swampy
ores.

17

Red calca-
reous ore.

18

Martial ca-
lamine.

19

Martial
pyrites.

Iron. small red masses, sometimes regularly formed, and usually cubical spherical, or dodecahedral, though their form varies considerably. Some are brown on the outside, others of the colour of iron, some yellowish, and resembling the ores of copper, even on their surface; but all of them are yellow, and as it were coppery within, and for the most part composed of needles, or pyramids of several sides, whose summits converge to a common centre. The pyrites are commonly dispersed, and particularly in copper mines in the neighbourhood of iron mines, and in clays and coal mines, the upper stratum of the latter being almost always pyritous. They are all easily decomposed, and yield green vitriol, as is explained under the article **CHEMISTRY**.

20
Arsenical
ore, mis-
pickel, or
speiss.

15. *Iron mineralized by arsenic.* This combination takes place either by the combination of arsenic alone with the metal, or in conjunction with sulphur. The former is called in Germany *mispickel*, and *speiss* by the Bohemians; is of a bright white colour, sometimes, though rarely, variegated like a pigeon's neck, and is not easily altered by exposure to the air. It is not magnetic either before or after calcination; it is soluble in acids, and affords arsenic by distillation in the proportion of 30 or 40 per cent. and sometimes contains a small proportion of copper and silver. It is frequently found in indurated clay, quartz, spar, schoerl, &c. and mixed with other metallic ores. When this metal contains less than $\frac{1}{10}$ th of arsenic, it is magnetic, according to Scheffer; whence, if the calcination be pushed to a sufficient length, the ore must remain magnetic.

21
White,
grey, &c.
pyrites, or
marcasite.

That species of ore which consists of iron mineralized by sulphur and arsenic together, contains the white, grey or bluish grey pyrites or marcasite. It is found either in solid compact masses of a moderate size, or in grains, and gives fire with steel. When burnt it affords a blue flame and the smell of arsenic, with orpiment or realgar, instead of pure arsenic by distillation in close vessels. It is not magnetic either before or after calcination, and contains much more arsenic than sulphur.

22
Native
Prussian
blue.

16. *Native Prussian blue* consists of clay mixed with iron, and coloured with some unknown tinging substance, generally found in swampy grounds or bogs. It is at first white, but when exposed to the air becomes either of a light or deep blue. By heat it turns greenish, and emits a slight flame, becoming afterward red and magnetic. It is soluble both in alkalies and acids; but the alkaline solution is precipitated by acids, and the acid solution by alkalies. The precipitate at first is greenish, and gradually assumes a white hue, but regains its blue colour on being mixed with vegetable astringents. Mr Woulfe found this kind of ore in Scotland on the surface of the earth. The greatest part of marshy grounds containing turf, likewise have some of this.

23
Terra ver-
te, or green
earth of
Verona,
&c.

17. The *terre verte*, or green earth of Verona and Normandy, is used as a pigment, and contains iron in some unknown state, mixed with clay, and sometimes with chalk and pyrites; alum and selenite being likewise accidentally mixed with it. It is soluble with difficulty in acids, is not magnetic before calcination, and becomes of a coffee-colour by heat.

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Iron mine-
ralized by
phosphoric
acid.

18. Mr Fourcroy informs us, that "it has been discovered some years ago, that iron is often united na-

turally with the phosphoric acid. The muddy or bog ores are sometimes of this nature: a portion of this compound remaining in the iron gives it the property of being brittle when cold. Iron in this state was called *siderite* by Bergman, and it has since been called *water-iron*.

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There are several other kinds of iron ore enumerated by mineralogists; but those already mentioned are the most remarkable.

The following observations on iron in its different states, with an account of the methods of manufacturing it, &c. are extracted from Magellan's Notes on Cronstedt's Mineralogy.

1. Iron is employed in three different states, each having its peculiar properties, by which they are each more particularly applicable to various purposes. The first is *cast iron*, the second is *wrought or malleable iron*, and the third is called *steel*.

According to Bergman, cast iron, which may be called *unripe or raw-iron*, contains the smallest share of phlogiston. The malleable iron contains the greatest quantity; and the steel a middling share between both, neither so much as the malleable, nor so little as the cast-iron. This last is called also *pig-iron*, and *yetlin* in England.

2. The richest ores of iron are the compact and ponderous, of a brownish, reddish-brown, or red colour. Some of these ores, in colour and appearance, do not ill resemble iron itself; as the grey ores of Derbyshire, and the bluish of the Forest of Dean in Gloucestershire. Most of the Swedish ores are likewise of this kind. Others are blackish, brown, red, yellowish, or rusty-coloured: these are the most common in England and Germany. There is one very singular species of a striated texture, and of a pale yellowish or greyish colour, oftentimes white, and in some degree pellucid; which, although in its crude state, promises nothing metallic, nevertheless, on being moderately calcined, discovers, by the deep colour it assumes, that it abounds in iron. Cramer informs us, that it gives out by fusion from 30 to 60 per cent. But some richer ores yield no less than 70 and 80 on the hundred.

3. Different kinds of iron ore are found adhering in some mines to the tops of caverns in form of icicles or striz, sometimes irregularly clustered together, sometimes hanging down like the bristles of a brush; from whence the name of *brush-iron-ore*. Other particular forms of the iron stone have occasioned a variety of fanciful names, that are met with in some of the metallurgic writers.

4. The iron of Great Britain is made from three different kinds of ores: 1. From the iron-ore called the *Lancashire ore*, from the country where it is found in greatest abundance. This ore is very heavy, of a fibrous or lamellated texture; it is of a dark purple, approaching to a shining black; and when reduced to powder, it becomes of a deep red: it lies in veins like the ores of other metals. 2. The bog-ore, which resembles a deep yellow ochry clay, and seems to be the deposition of some ferruginaceous rivulets, whose currents had formerly been over the surface of those flat marshy plains. It lies in beds of irregular thickness, commonly from 12 to 20 inches, and very various in their breadths from side to side, never being of great dimensions. 3. The iron-stones, however, have no regular

Iron.

gular appearance, and do not in the least resemble a metal in their external surface. They lie often in beds of great extent, like other stony matters, and are sometimes stratified with seams of pit-coal, forming alternate layers.

5. The ores of iron are commonly calcined previous to the fusion, even the harder ones, though they should contain nothing sulphureous or arsenical, in order to calcine the hard adhering matrices, and render the masses soft enough to be easily broken into fragments of a convenient size for melting. After the mineral is duly prepared, it must be smelted in furnaces of large capacities, from 16 to 25 feet high, and from 10 to 14 wide: the most approved shape nearly resembles that of a hen's egg, with the largest end undermost, below which is a square cavity to contain the melted metal, and at the top a very short vent about 20 inches in diameter. The inner wall is built of fire-stone, which endures very strong heat with little risk of melting, and all the joints are cemented with mortar composed of sand and clay. This is surrounded with more building, which deviates more and more from a circular form, and becomes a square building of about 20 feet at the base, and gradually converges to the top.

6. Near the bottom is an aperture, for the insertion of the pipe of a large bellows, worked by water or by other machines that may produce a strong current of air. Some very powerful ones, as those in the iron works at Colebrook-dale and at Carron, consist of two or more iron cylinders, about upwards of two feet wide, whose pistons are alternately moved by a small fire engine or by a water wheel: but Mr Wilkinson very ingeniously adapted to his own a large vaulted receiver surrounded by water, which produces a very regular and uniform blast. Two or more holes are also left ready to be occasionally opened at the bottom of the furnace, to permit at a proper time the scoria and the metal to flow out, as the process may require. Charcoal, or coke with lighted brushwood, is first thrown in: and when the inside of the furnace has acquired a strong ignition, the ore is thrown in by small quantities at a time, with more of the fuel; and commonly a portion of lime-stone is thrown also as a flux. The ore gradually subsides into the hottest part of the furnace, where it becomes fused: and the metallic parts being revived by the coal, pass through the scoria, and fall to the lower part or bottom of the furnace, where a passage is open for taking off the scum or dross. The metal now in strong fusion is let out by a tap-hole into furrows made in a bed of sand: the large mass, which sets in the main furrow, is called by the workmen a *sow*, and the lesser ones *pigs* of iron. Chimney-backs, stoves, garden-rollers, &c. are formed of this rough metal, taken out of the receiver with ladles, and cast into moulds made of fine sand."

It is proper to observe, that the excessive and long-continued ignition kept up in these furnaces gradually wastes the materials of which they are composed, rendering their sides thinner until at last they become unable to sustain the weight of the melted metal; so that it has sometimes been known to burst out suddenly in a violent and most destructive stream. At certain intervals, therefore, the fire ought to be allowed to go

out, whatever may be the expence of rekindling it, and the furnace examined and repaired.

Iron.

7. The quantity of fuel, the additions, and the heat, must be regulated, in order to obtain iron of good quality; and this quality must likewise in the first product be necessarily different, according to the nature of the parts that compose the ore.

8. Two or three tons, viz. 4000 or 6000 pounds weight of iron, are now run off in 24 hours, at some large furnaces, after the application of the large bellows; whilst scarcely an hundred weight could be obtained in a day before that application, because a large quantity of the metal was left in the dross; hence in some places the slags of different ores, left by old operators in former times, are now remelted to advantage along with fresh ore; and on account of the richness of these old slags of different ores, some people have been misled into the opinion, that the metal was regenerated in them.

9. Peat and turf has been found to answer tolerably well, mixed with charcoal, for the smelting of iron ores; but an attempt to use it on a large scale has at last been found not to answer the expectations that had been conceived from the first trials. Pit-coal, if applied to the same purpose, renders the iron hard and brittle; but this inconvenience is prevented, by previously coaking the coal, and employing it in the state of true coak. Cramer, in his *Art of Assaying*, p. 347. says, that pit-coals, kennel-coals, and Scotch-coals, which burn to a white ash like wood, and abound more in bitumen, may be used in the first fluxion of the iron from its ore; and if the iron proves not so malleable as required, this property may be given to it by melting the metal a second time with wood.

10. The best cast-iron or raw-iron, as much freed from heterogeneous matters as the usual process of smelting can effect it, is not at all malleable, and so hard as perfectly to withstand the file.

11. In general the impure cast-iron, as run from the ore, is melted down a second time in another furnace, intermixed with charcoal. A strong blast of air being impelled on the surface of the metal, its fusion is remarkably promoted; the iron thickens into a mass called a *loop*, which is conveyed under a large hammer raised by the motion of a water-wheel. The iron is there beaten into a thick square form, is then heated again until almost ready to melt, and is forged; by a few repetitions of this process, it becomes completely malleable, and is at length formed into bars for sale.

12. Iron in this state of malleability is much softer than before, and of a fibrous texture. But if it is still crude and brittle after the above process, it shows that there have remained heterogeneous matters, being hidden in its interstices, which must be expelled; for this purpose the iron must be stratified with charcoal-dust within a proper furnace, heaped up in good quantity in strata; then the fire must be blown pretty strongly, so as to bring it to a fusion, which is to be helped by the addition of fusible scorias or of sand. The fire must not be much greater than necessary to make all these melt as equally as possible; to obtain this end, the melted mass must be agitated here and there with poking rods of wrought iron, in order to make every part

Iron. part feel alike the action of the fire and air; and the increasing scorias taken out once or twice.

13. In the mean time, a great many sparkles will be thrown out from the iron, which diminish the more as the iron comes nearer to the desired degree of purity, but they never cease entirely. The burning coals being then removed, and the scoria conveyed out of the fire through a channel made for that purpose, the iron, by lessening the violence of the fire, grows solid, and must be taken out red-hot, and tried by striking it with a hammer. If it proves crude still, let the melting be repeated; and when it is at last sufficiently purified, it is to be hammered, and extended various ways, by making it red-hot many times over; this done, it will no longer be brittle, even when cold, as Cramer asserts.

14. Cast-iron has of late been brought into the malleable state by passing it through rollers instead of forging it. Indeed this seems to be a real improvement in the process, as well in point of dispatch, as in its not requiring that skill and dexterity which forgersmen only acquire by long practice. If the purposes of commerce should require more iron to be made, it will be easy to fabricate and erect rolling machines, though it might be impracticable to procure expert forgersmen in a short time.

15. This method was discovered by Henry Cort of Gosport, who obtained an exclusive privilege granted by the king's patent. By this process the raw or cast-iron is freed from the impurities, which are not discharged in the common methods of rendering this metal malleable; for iron is in itself a simple homogeneous metal; and all iron must become equally good, if it be purified from the heterogeneous and unmetallic particles that are any ways mixed with it.

16. The ordinary method of converting cast-iron into malleable, is, as we have seen, by employing great quantities of charcoal, which furnishes phlogiston, and remetalizes the particles, which are unmetallized and mixed with the heterogeneous matters contained in the fused mass: but in Cort's method there is no need of charcoal, instead of which only sea coal is employed; because the object is not to remetalize, but only to expel what is unmetallic, instead of endeavouring to restore the calcined parts with charcoal at a great expence, and still leaving the business undone. In this method the iron is only heated and wrought simply by the heat of the flame, instead of being mixed with the burning fuel and ashes, which are not easily disengaged afterwards from the metal. The squeezing it between the rollers, forces out the melted slags from the metallic pores, and brings its metallic fibres into a perfect solidity and close contact, so that they are obliged to cohere much more perfectly to each other, than by the interrupted and partial action of the hammer. By the operation of being long stirred, the sulphureous particles are more disposed to be disengaged, and are burned away in the form of blue sparks; the metal then begins to curdle, and to lose its fusibility, like folder when it just begins to settle; the metallic particles meeting and coalescing together, much like the churning of milk, where the cream is separated by the union formed between the fibrous particles of the cheese. The curdles formed into a connected mass,

become what is called *loops*. The process is as follows:

17. Five or six hundred weight of raw cast-iron (and even of cold short iron) is brought into a low fusion, on a kind of hearth or low furnace, in which it lies to the depth of about 6 inches. One or two workmen continually stir this fused mass with long iron pokers for about 4 or 5 hours. The heat is then lowered: the men fashion the iron into narrow pieces of about $3\frac{1}{2}$ feet long, and 3 inches square, with long knives or chissels made for that purpose. They are then heated to the welding degree, and hammered to expel and scatter the unmetallic dross. These slabs are then formed to a wedge-point at one end, in order to adapt them to be received between the rollers: they are malleable already, but they contain still some dross.

18. They are then heated again to the hottest welding heat in the air furnace: and immediately passed through large iron-rollers, turned by a water-wheel or by horses. If the end presented to the rollers should slip instead of entering, a boy, who stands ready, throws some sand upon the iron, and it goes in easily. Much foreign and heterogeneous matter is squeezed out by the rollers; and the iron comes out in a purer malleable state: The same heat will serve to pass the iron through two sets of rollers, which are grooved so as to fashion it into nail-rods or other forms according to the required purposes.

19. Various and repeated severe trials have been made in the royal dock-yards of England, in the presence of persons of knowledge and rank, to prove the strength, malleability, and softness or toughness of this new iron; and it has proved to be equal, and even sometimes superior, to the best Swedish iron. But it is not easy to conceive by what singular fatality so great an improvement in manufacturing this most useful metal has not yet been generally adopted by the iron-masters.

20. Steel is iron in an intermediate state between cast-iron and malleable iron, which is soft and tough. The iron run from some German ores is found to be a good steel when forged only to a certain point.

But the best steel is usually made by cementation from the best forged iron, with matters chiefly of the inflammable kind. Two parts of pounded charcoal and one of wood ashes is esteemed a good cement. The charcoal dust may be made of bones, horns, leather, and hairs of animals, or of any of these ingredients after they are burned in a close vessel till they are black: these being pulverized, and mixed with wood-ashes, must be well mixed together. The iron should be of pure metal, not over thick, and quite free from heterogeneous matters: their flexibility, both when hot and when cold, is a very good sign thereof. A deep crucible, two or three inches higher than the bars, is to receive part of the cement, well pressed at the bottom, the height of $1\frac{1}{2}$ inch; and the bars are to be placed perpendicularly, about one inch distant from the sides of the vessel and from each other. All the interstices are to be filled with the same cement, and the whole covered to the top with it; then a tile is applied to cover the vessel, stopping the joints with thin lute.

Iron.

21. The crucible is then to be put in the furnace, and a strong fire is to be made, that it be kept moderately red hot for six or ten hours together; at the end of which time they will be found converted into steel. If the cementation be continued too long, the steel will become excessively brittle, incapable of being welded, and apt to crack and fly in forging. On the contrary, steel cemented with absorbent earths is reduced to the state of forged iron.

22. Steel is further purified for making the nicest kinds of instruments, such as lancets, pen-knives, razors, and various pieces, for the best kind of watches, time-keepers, or chronometers, and astronomical regulators. This purification of steel consists in melting it again with a strong but regular fire in a crucible, the better to free it from the heterogeneous parts, and little flaws that may be contained in it. It is then called *cast-steel* when fused into bars: which name, however, does not imply that the pieces, for instance the cast-steel razors, have been really cast in their present shape; for they must be forged from the bar after it is cast. The fusion must have been perfect, so that the metallic parts be rendered uniform. The metal diminishes a little by this process, for a bar of common steel 36 inches long, will afterwards produce another only of 35, if properly fused and purified.

23. The cast-steel will not bear more than a red heat; otherwise it runs away, like sand under the hammer, if the heat is pushed to the welding degree. Dr Watson says, that this manufacture of cast-steel was introduced at Sheffield only about 40 years ago by one Waller. This man was still living about the year 1765; he dwelt at St Bartholomew's close, and was a galloon-wire drawer by trade. The difficulty of procuring small cylinders of good steel to flatten the wire for lace-work in his business, whose defect proceeded from the bad texture of the steel, set his imagination on the enquiry after a method of purifying the metal to a greater perfection: and he thought that a new fusion of it was the most likely to accomplish his views. After some trials, he at last succeeded; but it was soon known to others, who got the advantages for themselves; of which ill fate the real inventor very bitterly complained till the end of his life. His own name was even forgotten, as one Huntsman practised this art to such an extent, that cast steel was known under his sole name afterwards.

24. But before this discovery made by Waller in England, this kind of steel was made already in Germany, as Watson asserts; and from thence some small quantities were brought to England at a considerable price. Since that time this branch of business is carried on advantageously at Sheffield; for the manufactures there furnish a great abundance of broken tools and old bits of steel, at a penny a pound, which, after fusion and purification, sell for 10 or 12 times as much.

25. It is a valuable property of iron, after it is reduced into the state of steel, that though it is sufficiently soft when hot, or when gradually cooled, to be formed without difficulty into various tools and utensils; yet it may be afterwards rendered more or less hard, even to an extreme degree, by simply plunging it, when red-hot, into cold water. This is called *tempering*. The hardness produced is greater in proportion as the

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steel is hotter and the water colder. Hence arises the superiority of this metal for making mechanic instruments or tools, by which all other metals, and even itself, are filed, drilled, and cut. The various degrees of hardness given to iron, depend on the quantity of ignition it possesses at the moment of being tempered, which is manifested by the succession of colours, exhibited on the surface of the metal, in the progress of its receiving the increasing heat. They are the yellowish-white, yellow, gold-colour, purple, violet, and deep-blue; after which, the complete ignition takes place. They proceed from a kind of scorification on the surface of the heated metal.

26. A bar of clean white steel may be made to assume all the above colours at once, by placing one end in the fire, and keeping the other end out, which is supposed of a proper length to remain cold.

27. These colours serve as signs to direct the artist in tempering this metal. For though ignited steel, suddenly quenched in very cold water, proves excessively hard and brittle; yet it may be reduced to the required degree of temper by heating it till it exhibits a known colour. This is the method employed in this process by the artists. As soon as the piece of steel is completely ignited, they plunge it in a very cold water; and as soon as it loses its fiery appearance, they take it out, rub it quickly with a file, or on a plate covered with sand, that it may have a white surface. The heat, which is still within the metal, soon begins to produce the succession of colours. If a hard temper is desired, as soon as the yellow tinge appears, the piece is dipped again, and stirred about in the cold water. If the purple appears before the dipping it, the temper will be fit for tools employed in working upon metals; if dipped while blue, it will be proper for springs, and for other instruments fit to cut all sorts of soft substances; but if the last pale colour be waited for, the steel will not be hard at all.

28. It deserves notice, that a piece of iron is rendered considerably warm by hammering, so as even to become red hot. But after the iron has been completely hammered once, it is asserted that it cannot be rendered again red hot by the same operation, because no further compression can then be made. Hard steel is the only metal that, being struck slantwise with the sharp edge of a flint, or of another hard stone, produces sparks of fire.

29. Iron is often manufactured so as to be 150 times, and even above 630 times, more valuable than gold. On weighing some common watch pendulum-springs at Mr Tho. Wright's, watch-maker to the king, such as are sold at half a crown by the London artists for common work, ten of them weighed but one single grain. Hence one pound avoirdupois (= 7000 gr.) contains ten times as many of these springs; which, at half a crown a-piece, amount to 8750 l. Sterling. The troy ounce of gold sells at 4 l. Sterling, and the pound (= 5760 gr.) at 48 l. Sterling, which gives 58,33 (or 58 l. 6 s. 7 d.) for each pound avoirdupois of gold: and of course $\frac{58,33}{10} = 5,833$. But the pendulum-springs of the best kind of watches sell at half a guinea each; and at this rate the above-mentioned value must be increased in the ratio of 1. to 4.2; viz. of half a crown to half a guinea: which will amount to 36,750 l. Sterling; and this sum divided by

Iron.

Iron. by the value of this pound of gold, gives above 630 to the quotient.

Under the article **ELECTRICITY**, we have taken notice of a curious experiment of burning iron in dephlogisticated air; of which an account is also given under **AEROLOGY**, where the experiments of Dr Priestley are related. In the last number of the *Chemical Annals* we find the subject particularly treated of by M. Lavoisier. "The beautiful experiment of Mr Ingenhousz (says he) is now well known. A piece of very fine iron wire is turned into a spiral form; one end of it is fixed in a bottle-cork; to the other a piece of agaric is fastened: when this has been done, a bottle is filled with vital air; the agaric is lighted, and it is then, along with the iron wire, quickly introduced into the bottle, which is stopped with the cork. As soon as the agaric is plunged into the vital air, it begins to burn with a dazzling light; the inflammation is communicated to the iron, which also burns, throwing off bright sparks that fall to the bottom of the bottle in round globules. These globules become black as they cool, and preserve some remains of their metallic lustre. The iron thus burnt is more brittle than glass itself; it powders easily; is attracted by the magnet, but less so than before the operation."

M. Lavoisier, in order to observe more fully the changes which happened to the metal on this occasion, repeated the experiment upon a scale considerably larger. He immersed chips of iron turned into a spiral form into a vessel filled with pure air which contained about 12 quarts; fixing to the end of each chip a small bit of agaric, and a particle of phosphorus weighing scarce $\frac{1}{8}$ th of a grain. Having set fire to the phosphorus and agaric, the iron is wholly consumed to the very last particle with a bright white light resembling stars in rockets. The heat in this combustion melts the iron, which falls down in globules of different sizes. In the first instant of the combustion there is a slight dilatation of the air; but this is succeeded by a very rapid diminution; and when the quantity of iron is sufficient, and the air very pure, almost the whole gas is absorbed. Our author recommends only small quantities of iron to be burnt at a time; because the heat produced by its combustion is so great, that the glass is apt to fly. A dram, or a dram and an half, is sufficient for a jar holding four gallons, which ought to be very strong in order to resist the weight of the mercury with which it is to be filled. The increase of weight in the iron, by being burnt in this manner, is, according to our author, about 35 per cent. It is then in a state of ethiops, and may be powdered in a mortar. When the air in which the combustion has been performed is very pure, there is no great difference betwixt that in which the iron has been burnt and the original quantity, excepting only a small mixture of fixed air from the little portion of charcoal contained in the iron.

In this work also we find some observations on the solubility of iron in pure water from Crell's *Annals* for the year 1788. It has generally been supposed that pure water is incapable of dissolving or holding iron in solution; but the fact seems now to be established by the following experiment. A pound of fresh distilled water was poured upon two ounces of iron-filings into narrow-necked glass retort; the vessel was then put

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in a sand heat, and the liquid evaporated to one half; after which the mouth was slightly stopped with a cork, and the matter left to digest in a gentle heat. On opening the vessel it was found that the water had become styptic, and had a ferruginous taste; whence it appeared that part of the metal was dissolved. Phlogisticated alkali had no effect upon this solution until a few drops of pure distilled acetic acid were added, when a little Prussian blue fell to the bottom. Soon after making this experiment, our author met with a natural mineral water which contained iron in solution, though it would not precipitate any thing until a few drops of acid were added. This solubility of iron in pure water has been also taken notice of by M. Landriani and M. Monnet.

Iron is easily calcinable by fire, and is soluble in all the acids, even that of fixed air. By exposure to the atmosphere it is attacked by the pure part of the surrounding fluid, which thus becomes converted into fixed air, the metal in the mean time being changed into a yellowish brown powder called *rust*. Common iron is much more subject to rust than steel; and this facility of calcination renders it a matter of great importance to discover some effectual method of preventing it from taking place. Various compositions have been recommended, but none have been found more effectual than common oil. As the use of this, however, must be on many occasions troublesome and disagreeable, a still more commodious method has been fallen upon. It is known that the metal, after having undergone that kind of calcination in which it combines with the base of dephlogisticated air, or begins to combine with it, is not subject to rust. By giving it a coating of this kind, therefore, it is effectually preserved from any action of the air; and this is done by heating it till it assumes a blue colour, which indicates a partial calcination on the outside: and thus utensils are made capable of being preserved from rust for a long time; though even these, when exposed wet, or even a long time to the atmosphere, will be covered with rust and decay like others. For the chemical properties of iron, see **CHEMISTRY**; for its electrical and magnetical ones, see **ELECTRICITY** and **MAGNETISM**.

IRON-MOULD, and spots of ink in linen, may be taken out by dipping the stained part in water, sprinkling it with a little of the powdered essential salt of wood-sorrel, then rubbing on a pewter plate, and washing the spot out with warm water.

IRON-SICK, in the sea-language, is said of a ship or boat, when her bolts or nails are so eaten with rust, and so worn away, that they occasion hollows in the planks, whereby the vessel is rendered leaky.

IRON-WOOD, in botany. See the article **SIDEROXYLUM**.

IRON-WORK, in botany. See the article **SIDERITIS**.

IRONY, in rhetoric, is when a person speaks contrary to his thoughts, in order to add force to his discourse; whence Quintilian calls it *diversifloquium*.

Thus, when a notorious villain is scornfully complimented with the titles of a very honest and excellent person; the character of the person commended, the air of contempt that appears in the speaker, and the exorbitancy of the commendations, sufficiently discover the dissimulation of irony.

Ironical exhortation is a very agreeable kind of trope; which,

Iron,
Irony.

25

How to
preserve
iron from
rusting.

Iroquois
Irritability.

which, after having set the inconveniences of a thing in the clearest light, concludes with a feigned encouragement to pursue it. Such is that of Horace, when, having beautifully described the noise and tumults of Rome, he adds ironically,

"Go now, and study tuneful verse at Rome!"

IROQUOIS, the name of five nations in North America, in alliance with the British colonies. They are bounded by Canada on the north, by the British plantations of New York and Pennsylvania on the east and south, and by the lake Ontario on the west.

IRRADIATION, the act of emitting subtle effluvia, like the rays of the sun, every way. See **EFFLUVIA**.

IRREGULAR, something that deviates from the common forms or rules: thus, we say an irregular fortification, an irregular building, an irregular figure, &c.

IRREGULAR, in grammar, such inflections of words as vary from the general rules; thus we say, irregular nouns, irregular verbs, &c.

The distinction of irregular nouns, according to Mr Ruddiman, is into three kinds, viz. variable, defective, and abundant; and that of irregular verbs into anomalous, defective, and abundant.

IRRITABILITY, in anatomy and medicine, a term first invented by Glisson, and adopted by Dr Haller to denote an essential property of all animal bodies; and which, he says, exists independently of and in contradistinction to sensibility. This ingenious author calls that part of the human body *irritable*, which becomes shorter upon being touched; *very irritable*, if it contracts upon a slight touch; and the contrary, if by a violent touch it contracts but little. He calls that a sensible part of the human body, which upon being touched transmits the impression of it to the soul; and in brutes, he calls those parts sensible, the irritation of which occasions evident signs of pain and disquiet in the animal. On the contrary, he calls that insensible, which being burnt, tore, pricked, or cut till it is quite destroyed, occasions no sign of pain nor convulsion, nor any sort of change in the situation of the body. From the result of many cruel experiments he concludes, that the epidermis is insensible; that the skin is sensible in a greater degree than any other part of the body; that the fat and cellular membrane are insensible; and the muscular flesh sensible, the sensibility of which he ascribes rather to the nerves than to the flesh itself. The tendons, he says, having no nerves distributed to them, are insensible. The ligaments and capsulæ of the articulations are also concluded to be insensible; whence Dr Haller infers, that the sharp pains of the gout are not seated in the capsulæ of the joint, but in the skin, and in the nerves which creep upon its external surface. The bones are all insensible, says Dr Haller, except the teeth; and likewise the marrow. Under his experiments the perosteum and pericranium, the dura and pia mater, appeared insensible; and he infers, that the sensibility of the nerves is owing to the medulla, and not to the membranes. The arteries and veins are held susceptible of little or no sensation, except the carotid, the lingual, temporal, pharyngeal, labial, thyroidal, and the aorta near the heart; the sensibility of which is ascribed to the nerves that accompany them. Sensibility is allowed to the internal membranes of the stomach, intestines, bladder, ureters, vagina, and womb, on account of

their being of the same nature with the skin: the heart is also admitted to be sensible: but the lungs, liver, spleen, and kidneys, are possessed of a very imperfect, if any, sensation. The glands, having few nerves, are endowed with only an obtuse sensation. Some sensibility is allowed to the tunica choroidis and the iris, tho' in a less degree than the retina; but none to the cornea. Dr Haller concludes, in general, that the nerves alone are sensible of themselves; and that, in proportion to the number of nerves apparently distributed to particular parts, such parts possess a greater or less degree of sensibility.

Irritability, he says, is so different from sensibility, that the most irritable parts are not at all sensible, and *vice versa*. He alleges facts to prove this position, and also to demonstrate, that irritability does not depend upon the nerves, which are not irritable, but upon the original formation of the parts which are susceptible of it. Irritability, he says, is not proportioned to sensibility; in proof of which, he observes, that the intestines, though rather less sensible than the stomach, are more irritable; and that the heart is very irritable, though it has but a small degree of sensation.

Irritability, according to Dr Haller, is the distinguishing characteristic between the muscular and cellular fibres; whence he determines the ligaments, perosteum, meninges of the brain, and all the membranes composed of the cellular substance, to be void of irritability. The tendons are unirritable; and though he does not absolutely deny irritability to the arteries, yet his experiments on the aorta produced no contraction. The veins and excretory ducts are in a small degree irritable, and the gall bladder, the ductus chole-dochus, the ureters and urethra, are only affected by a very acrid corrosive; but the lacteal vessels are considerably irritable. The glands and mucous sinuses, the uterus in quadrupeds, the human matrix, and the genitals, are all irritable; as are also the muscles, particularly the diaphragm. The oesophagus, stomach, and intestines, are irritable: but of all the animal organs the heart is endued with the greatest irritability. In general, there is nothing irritable in the animal body but the muscular fibres; and the vital parts are the most irritable. This power of motion, arising from irritations, is supposed to be different from all other properties of bodies, and probably resides in the glutinous mucus of the muscular fibres, altogether independent of the influence of the soul. The irritability of the muscles is said to be destroyed by drying of the fibres, congealing of the fat, and more especially by the use of opium in living animals. The physiological system, of which an abstract has been now given, has been adopted and confirmed by Castell and Zimmermann, and also by Dr Brocklesby, who suggests, that irritability, as distinguished from sensibility, may depend upon a series of nerves different from such as serve either for voluntary motion or sensation. This doctrine, however, has been controverted by M. le Cat, and particularly by Dr Whytt in his *Physiological Essays*. See also **ANATOMY**, n° 86, *et seq.* and n° 136.

IRROGATIO, a law term amongst the *Romans*, signifying the instrument in which were put down the punishments which the law provided against such offences as any person was accused of by a magistrate before the people. These punishments were first proclaimed *viva voce* by the accuser, and this was called *Inquisitio*:

The

Irromango The same, being immediately after expressed in writing, took the name of *Rogatio*, in respect of the people, who were to be consulted or asked about it, and was called *Irrogatio* in respect of the criminal, as it imported the mulct or punishment assigned him by the accuser.

IRROMANGO, or **ERRAMONGO**, one of the New Hebrides islands, is about 24 or 25 leagues in circuit; the middle of it lies in E. Long. 169. 19. S. Lat. 18. 54. The inhabitants are of the middle size, and have a good shape and tolerable features. Their colour is very dark; and they paint their faces, some with black, and others with red pigment: their hair is curly and crisp, and somewhat woolly. Few women were seen, and those very ugly: they wore a petticoat made of the leaves of some plant. The men were quite naked, excepting a belt tied about the waist, and a piece of cloth, or a leaf, used for a wrapper. No canoes were seen in any part of the island. They live in houses covered with thatch; and their plantations are laid out by line, and fenced round. An unlucky scuffle between the British sailors and these people, in which four of the latter were desperately wounded, prevented captain Cook from being able to give any particular information concerning the produce, &c. of this island.

IRTIS, a large river of Asia, in Siberia, which rises among the hills of the country of the Kalmucks, and, running north-east, falls into the Oby near Toboluk. It abounds with fish, particularly sturgeon, and delicate salmon.

IRVINE, a sea-port and parliament town of Scotland, in the bailiwick of Cunningham; seated at the mouth of a river of the same name on the frith of Clyde, in W. Long. 2. 55. N. Lat. 55. 36. This port had formerly several buoys in the herring-fishery. At present that branch is given up; but the inhabitants still employ a number of brigs in the coal-trade to Ireland. Irvine had a viscount's title, now extinct.

ISAAC, the Jewish patriarch, and example of filial obedience, died 1716 B. C. aged 180.

ISÆUS, a Greek orator, born at Colchis, in Syria, was the disciple of Lyfias, and the master of Demosthenes; and taught eloquence at Athens, about 344 years B. C. Sixty-four orations are attributed to him; but he composed no more than 50, of which only 10 are now remaining. He took Lyfias for his model, and so well imitated his style and elegance, that we might easily confound the one with the other, were it not for the figures which Isæus first introduced into frequent use. He was also the first who applied eloquence to politics, in which he was followed by his disciple Demosthenes.

He ought not to be confounded with Ixæus, another celebrated orator, who lived at Rome in the time of Pliny the Younger, about the year 97.

ISAIAH, or *the Prophecy of Isaiah*, a canonical book of the Old Testament. Isaiah is the first of the four greater prophets; the other three being Jeremiah, Ezekiel, and Daniel. This prophet was of royal blood, his father Amos being brother to Azariah king of Judah. The five first chapters of his prophecy relate to the reign of Uzziah; the vision in the sixth chapter happened in the time of Jotham: the next chapters, to the fifteenth, include his prophecies under the reign of Ahaz; and those that were made un-

der the reigns of Hezekiah and Manasseh, are related in the next chapters to the end. Isaiah foretold the deliverance of the Jews from their captivity in Babylon by Cyrus, one hundred years before it came to pass. But the most remarkable of his predictions are those concerning the Messiah, which describe not only his descent, but all the remarkable circumstances of his life and death. The style of this prophet is noble, nervous, sublime, and florid, which he acquired by converse with men of the greatest abilities and elocution: Grotius calls him the Demosthenes of the Hebrews. However, the profoundness of his thoughts, the loftiness of his expressions, and the extent of his prophecy, render him one of the most difficult of all the prophets; and the commentaries that have been hitherto written on his prophecy fall short of a full explication of it. Bishop Lowth's new translation, &c. published in 1778, throws considerable light on the composition and meaning of *Isaiah*.

ISATIS, **WOAD**: A genus of the siliquosa order, belonging to the tetradynamia class of plants; and in the natural method ranking under the 39th order, the *Siliquosa*. The siliqua is lanceolated, unilocular, monospermous, bivalved, and deciduous; the valves navicular or canoe-shaped. There are four species; but the only one worthy of notice is the tinctoria, or common woad, which is cultivated in several parts of Britain for the purposes of dyeing; being used as a foundation for many of the dark colours. See *COLOUR-Making*, n° 37; and **WOAD**.

The plant is biennial; the lower leaves are of an oblong oval figure, and pretty thick consistence, ending in obtuse roundish points; they are entire on their edges, and of a lucid green. The stalks rise four feet high, dividing into several branches, garnished with arrow-shaped leaves sitting close to the stalks; the branches are terminated by small yellow flowers, in very close clusters, which are composed of four small petals, placed in form of a cross, which are succeeded by pods shaped like a bird's tongue, which, when ripe, turn black, and open with two valves, having one cell, in which is situated a single seed.

This sort is sown upon fresh land which is in good heart, for which the cultivators of woad pay a large rent. They generally choose to have their lands situated near great towns, where there is plenty of dressing; but they never stay long on the same spot: for the best ground will not admit of being sown with woad more than twice; and if it is oftener repeated, the crop seldom pays the charges of culture, &c. Those who cultivate this commodity have gangs of people who have been bred to the employment; so that whole families travel about from place to place wherever their principal fixes on land for the purpose. As the goodness of woad consists in the size and fatness or thickness of the leaves, the only method to obtain this, is by sowing the seed upon ground at a proper season, and allowing the plants proper room to grow; as also to keep them clean from weeds, which, if permitted to grow, will rob the plants of their nourishment. After having made choice of a proper spot of land, which should not be too light and sandy, nor over stiff and moist, but rather a gentle hazel loam, whose parts will easily separate, the next is to plough this up just before winter, laying it in narrow high ridges, that

Note.

the frost may penetrate through the ridges to mellow and soften the clods; then in the spring plough it again crosswise, laying it again in narrow ridges. After it has lain for some time in this manner, and the weeds begin to grow, it should be well harrowed to destroy them: this should be repeated twice while the weeds are young; and, if there are any roots of large perennial weeds, they must be harrowed out, and carried off the ground. In June the ground should be a third time ploughed, when the furrows should be narrow, and the ground stirred as deep as the plough will go, that the parts may be as well separated as possible; and when the weeds appear again, the ground should be well harrowed to destroy them. Toward the end of July, or the beginning of August, it should be ploughed the last time, when the land should be laid smooth; and when there is a prospect of showers, the ground must be harrowed to receive the seeds, which should be sown in rows with the drill-plough, or in broad-cast after the common method; but it will be proper to steep the seeds one night in water before they are sown, which will prepare them for vegetation: if the seeds are sown in drills, they will be covered with an instrument fixed to the plough for that purpose, but those which are sown broad-cast in the common way must be well harrowed in. If the seeds are good, and the season favourable, the plants will appear in a fortnight, and in a month or five weeks will be fit to hoe; for the sooner this is performed when the plants are distinguishable, the better they will thrive, and the weeds being then young will be soon destroyed. The method of hoeing these plants is the same as for turnips: with this difference only, that these plants need not be thinned so much; for at the first hoeing, if they are separated to the distance of four inches, and at the last to six inches, it will be space enough for the growth of the plants; and if this is carefully performed, and in dry weather, most of the weeds will be destroyed: but as some of them may escape in this operation, and young weeds will rise, so the ground should be a second time hoed in the beginning of October, always choosing a dry time for this work; at this second operation, the plants should be singled out to the distance they are to remain. After this, if carefully performed, the ground will be clean from weeds till the spring, when young weeds will come up: therefore about the middle of March will be a good time to hoe the ground again; for while the weeds are young, it may be performed in less than half the time it would require if the weeds were permitted to grow large, and the sun and wind will much sooner kill them: this hoeing will also stir the surface of the ground, and greatly promote the growth of the plants; if this is performed in dry weather, the ground will be clean till the first crop of woad is gathered, after which it must be again well cleaned; if this is carefully repeated after the gathering each crop, the land will always lie clean, and the plants will thrive the better. The expence of the first hoeing will be about six shillings *per* acre, and for the after hoeings half that price will be sufficient, provided they are performed when the weeds are young, for if they are suffered to grow large, it will require more labour, nor can it be so well performed.

If the land, in which this seed is sown, should have

been in culture before for other crops, so not in good heart, it will require dressing before it is sown, in which case rotten stable-dung is preferable to any other; but this should not be laid on till the last ploughing, just before the seeds are sown, and not spread till the land is ploughed, that the sun may not exhale the goodness of it, which in summer is soon lost when spread on the ground. The quantity should not be less than 20 loads to each acre, which will keep the ground in heart till the crop of woad is spent.

The time for gathering of the crop is according to the season: but it should be performed as soon as the leaves are fully grown, while they are perfectly green; for when they begin to change pale, great part of their goodness is over, for the quantity will be less, and the quality greatly diminished.

If the land is good, and the crop well husbanded, it will produce three or four gatherings; but the two first are the best. These are commonly mixed together in the manufacturing of it: but the after crops are always kept separate; for if these are mixed with the other, the whole will be of little value. The two first crops will sell from 25 l. to 30 l. a ton; but the latter will not bring more than 7 l. or 8 l. and sometimes not so much. An acre of land will produce a ton of woad, and in good seasons near a ton and an half.

When the planters intend to save the seeds, they cut three crops of the leaves, and then let the plants stand till the next year for seed; but if only one crop is cut, and that only of the outer leaves, letting all the middle leaves stand to nourish the stalks, the plants will grow stronger, and produce a much greater quantity of seeds.

These seeds are often kept two years, but it is always best to sow new seeds when they can be obtained. The seeds ripen in August; and when the pods turn to a dark colour, the seeds should be gathered. It is best done by reaping the stalks in the same manner as wheat, spreading the stalks in rows upon the ground: and in four or five days the seeds will be fit to thresh out, provided the weather is dry; for if it lies long, the pods will open and let out the seeds.

There are some of the woad planters who feed down the leaves in winter with sheep; which is a very bad method: for all plants which are to remain for a future crop should never be eaten by cattle, for that greatly weakens the plants; therefore those who eat down their wheat in winter with sheep are equally blameable.

ISATIS, in zoology, a synonyme of the *canis lagopus*. See CANIS.

ISAURA, or ISAVRUS (anc. geog.), a strong city at mount Taurus, in Isauria, twice demolished; first by Perdiccas, or rather by the inhabitants, who, thro' despair, destroyed themselves by fire, rather than fall into the hands of the enemy; again by Servilius, who thence took the surname *Isauricus*. Strabo says there were two Isauras, the old and the new, but so near that other writers took them but for one.

ISAURIA, a country touching Pamphylia and Cilicia on the north, rugged and mountainous, situated almost in mount Taurus, and taking its name from Isaura; according to some, extending to the Mediterranean by a narrow slip. Stephanus, Ptolemy, and Zosimus, make no mention of places on the sea; though Pliny does,

Isauria.

Isaurica || *Iselastica*. does, as also Strabo; but doubtful, whether they are places in Isauria Proper, or in Pamphylia, or in Cilicia.

ISAURICA, a part of Lycaonia, bordering on mount Taurus.

ISCA DUMNIORUM (anc. geog.); a town in Britain. Now Exeter, capital of Devonshire. W. Long. 3° 40', Lat. 5° 44'. Called *Caer-Iſk* in British, (Camden.)

ISCA SILURUM (anc. geog.); the station of the Legion II. Augusta, in Britain. Now *Caerleon*, a town of Monmouthshire, on the Uske.

ISCHALIS, or ISCALIS (anc. geog.); a town of the Belgæ in Britain. Now *Ilchester*, in Somersetshire, on the river Ill.

ISCHÆMUM, in botany: A genus of the monœcia order, belonging to the polygamia class of plants; and in the natural method ranking under the 4th order, *Gramina*. The calyx of the hermaphrodite is a biflorous glume; the corolla bivalved; there are three stamina, two styles, and one seed. The calyx and corolla of the male as in the former with three stamina.

ISCHIUM, in anatomy, one of the bones of the pelvis. See ANATOMY, n° 41.

ISCHIA, an island of Italy, in the kingdom of Naples, about 15 miles in circumference, lying on the coast of the Terra di Lavoro, from which it is three miles distant. It is full of agreeable valleys, which produce excellent fruits. It hath also mountains on which grow vines of an excellent kind: likewise fountains, rivulets, and fine gardens.

ISCHIA, a town of Italy, and capital of an island of the same name, with a bishop's see and a strong fort. Both the city and fortress stand upon a rock, which is joined to the island by a strong bridge; the rock is about seven furlongs in circumference. The city is like a pyramid of houses piled upon one another, which makes a very singular and striking appearance. At the end of the bridge next the city are iron gates, which open into a subterraneous passage, through which they enter the city. They are always guarded by soldiers who are natives of the island. E. Long. 13. 15. N. Lat. 40. 50.

ISCHURIA, *ischuria* (formed from *ισχω* "I stop," and *ουρα* "urine," in physic), a disease consisting in an entire suppression of urine. See MEDICINE-Index.

It is occasioned by any thing which may obstruct the passages of the reins, ureters, or the neck of the bladder, as sand, stone, mucus, &c. It may also arise from an obstruction of the nerves which pass to the reins or bladder, as we see it does in a palsy of the parts below the diaphragm. The too great distension of the bladder may also produce the same effect: for the fibres being much lengthened, and consequently condensed, the spirits necessary for their contraction cannot get admittance; whence it is that persons who have retained their urine a long time, find a great deal of difficulty in discharging it.

ISELASTICS, a kind of games, or combats, celebrated in Greece and Asia, in the time of the Roman emperors.

The victor at these games had very considerable privileges conferred on him, after the example of Augustus and the Athenians, who did the like to con-

querors at the Olympic, Pythian, and Isthmian games. They were crowned on the spot immediately after their victory, had pensions allowed them, were furnished with provisions at the public cost, and were carried in triumph to their country.

ISENACH, a town of Germany, in the circle of Upper Saxony, from whence one of the Saxon princes takes the title of *duke*. There are iron mines in the neighbourhood. E. Long. 9. 17. N. Lat. 51. 0.

ISENARTS, or EISENARTS, a considerable town of Germany in Austria and in Styria; famous for its iron mines. E. Long. 15. 25. N. Lat. 46. 56.

ISENBURG, a large town of Germany, capital of a county of the same name, with a handsome castle, seated on the river Seine, in E. Long. 7. 14. N. Lat. 50. 28. The county belongs to the elector of Treves.

ISENGHEIN, a town of the Austrian Netherlands; with the title of a *principality*, seated on the river Mander, in E. Long. 3. 18. N. Lat. 50. 44.

ISERNIA, a town of Italy, in the kingdom of Naples, and in the county of Molise, with a bishop's see. It is seated at the foot of the Appenines, in E. Long. 14. 20.

ISH, in Scots law, signifies *expiry*. Thus we say "the *ish* of a lease." It signifies also *to go out*; thus we say "free *ish* and entry" from and to any place.

ISIA, *Isis*, feasts and sacrifices anciently solemnized in honour of the goddess Isis.—The Isis were full of the most abominable impurities; and for that reason, those who were initiated into them were obliged to take an oath of secrecy. They held for nine days successively, but grew so scandalous, that the senate abolished them at Rome, under the consulate of Piso and Gabinius. They were re-established by Augustus, and the emperor Commodus himself assisted at them, appearing among the priests of that goddess with his head shaven, and carrying the Anubis.

ISIAC TABLE is one of the most considerable monuments of antiquity, discovered at Rome in 1525, and supposed by the various figures in bas relief upon it, to represent the feasts of Isis, and other Egyptian deities. There have been various opinions as to the antiquity of this monument: some have supposed that it was engraved long before the time when the Egyptians worshipped the figures of men and women. Others, among whom is bishop Warburton, apprehend, that it was made at Rome by persons attached to the worship of Isis. Dr Warburton considers it as one of the most modern of the Egyptian monuments, on account of the great mixture of hieroglyphic characters which it bears.

ISIACI, priest of the goddess Isis.—Dioscorides tells us, that they bore a branch of sea-wormwood in their hands instead of olive. They sung the praises of the goddess twice a-day, viz. at the rising of the sun, when they opened her temple; after which they begged alms the rest of the day, and returning at night, repeated their orisons, and shut up the temple.

Such was the life and office of the *Isiaci*; they never covered their feet with any thing but the thin bark of the plant papyrus, which occasioned Prudentius and others to say they went bare-footed. They wore

Menach || *Isiaci*.

Isidorus
||
Islam.

wore no garments but linen, because Isis was the first who taught mankind the culture of this commodity.

ISIDORUS, called DAMIATENSIS, or PELUSIOTA, from his living in a solitude near that city, was one of the most famous of all St Chrysostom's disciples, and flourished in the time of the general council held in 421. We have 2012. of his epistles in five books. They are short, but well written, in Greek. The best edition is that of Paris, in Greek and Latin, printed in 1638, in folio.

ISIGNI, a town of France, in Lower Normandy, with a small harbour, and well known on account of its salt works, its cyder, and its butter. W. Long. 6. 50. N. Lat. 49. 20.

ISINGLASS. See ICHTHYOCOLLA.

ISIS, a celebrated deity of the Egyptians, daughter of Saturn and Rhea, according to Diodorus of Sicily. Some suppose her to be the same as Io, who was changed into a cow, and restored to her human form in Egypt, where she taught agriculture, and governed the people with mildness and equity, for which reasons she received divine honours after death. According to some traditions mentioned by Plutarch, Isis married her brother Osiris, and was pregnant by him even before she had left her mother's womb. These two ancient deities, as some authors observe, comprehended all nature and all the gods of the heathens. Isis was the Venus of Cyprus, the Minerva of Athens, the Cybele of the Phrygians, the Ceres of Eleusis, the Proserpine of Sicily, the Diana of Crete, the Bellona of the Romans, &c. Osiris and Isis reigned conjointly in Egypt; but the rebellion of Typhon, the brother of Osiris, proved fatal to this sovereign. The ox and the cow were the symbols of Osiris and Isis; because these deities, while on earth, had diligently applied themselves in cultivating the earth. As Isis was supposed to be the moon as Osiris the sun, she was represented as holding a globe in her hand, with a vessel full of ears of corn. The Egyptians believed that the yearly and regular inundations of the Nile proceeded from the abundant tears which Isis shed for the loss of Osiris, whom Typhon had basely murdered. The word *Isis*, according to some, signifies "ancient," and on that account the inscriptions on the statues of the goddesses were often in these words: "I am all that has been, that shall be, and none among mortals has hitherto taken off my veil." The worship of Isis was universal in Egypt, the priests were obliged to observe perpetual chastity, their head was closely shaved, and they always walked barefooted, and clothed themselves in linen garments. They never eat onions, they abstained from salt with their meat, and were forbidden to eat the flesh of sheep and of hogs. During the night they were employed in continual devotion near the statue of the goddess. Cleopatra, the beautiful queen of Egypt, was wont to dress herself like this goddess, and affected to be called a second Isis.

ISIS, or *Thames*, a river that has its rise in Gloucestershire, and flows through only a small part of Wiltshire. It enters this county near its source, and begins to be navigable for boats at Cricklade; but after running in a serpentine manner about four miles, it leaves Gloucestershire at a village called *Castle Eaton*.

ISLAM; the true faith, according to the Mahometans. See MAHOMETANISM.

ISLAND, a tract of dry land encompassed with water; in which sense it stands contradistinguished from *Land*, CONTINENT, or TERRA FIRMA.

Several naturalists are of opinion, that the islands were formed at the deluge; others think, that there have been new islands formed by the casting up of vast heaps of clay, mud, sand, &c.; others think they have been separated from the continent by violent storms, inundations, and earthquakes. These last have observed, that the East Indies, which abound in islands more than any other part of the world, are likewise more annoyed with earthquakes, tempests, lightnings, volcanoes, &c. than any other part. Others again conclude, that islands are as ancient as the world, and that there were some at the beginning; and, among other arguments, support their opinion from Gen. x. 5. and other passages of Scripture.

Varenus thinks that there have been islands produced each of these ways. St Helena, Ascension, and other steep rocky islands, he supposes to have become so by the sea's overflowing their neighbouring champaigns: but by the heaping up huge quantities of sand, and other terrestrial matter, he thinks the islands of Zealand, Japan, &c. were formed. Sumatra and Ceylon, and most of the East India islands, he thinks, were rent off from the main land; and concludes, that the islands of the Archipelago were formed in the same way, imagining it probable that Deucalion's flood might contribute towards it. The ancients had a notion that Delos, and a few other islands, rose from the bottom of the sea; which, how fabulous soever it may appear, agrees with later observations. Seneca takes notice, that the island Therasia rose thus out of the *Ægean* sea in his time, of which the mariners were eye-witnesses.

It is indeed very probable, that many islands have existed not only from the deluge, but from the creation of the world; and we have undoubted proofs of the formation of islands in all the different ways above-mentioned. Another way, however, in which islands are frequently formed in the South Sea, is by the coralline insects. On this subject the following curious dissertation by Alexander Dalrymple, Esq; hath appeared in the Philosophical Transactions for the year 1767.

"These islands are generally long and narrow: they are formed by a narrow bar of land, inclosing the sea within it; generally, perhaps always, with some ingress at least to the tide; commonly with an opening capable of receiving a canoe, and frequently sufficient to admit even larger vessels.

"The origin of these islands will explain their nature. What led me first to this deduction was an observation of Abdul Roobin, a Sooloo pilot, that all the islands lying off the north-east coast of Borneo had shoals to the eastward of them.

"These islands being covered to the westward by Borneo, the winds from that quarter do not attack them with violence. But the north-east winds, tumbling in the billows from a wide ocean, heap up the coral with which those seas are filled. This, obvious after storms, is perhaps at all other times imperceptibly effected.

"The coral banks, raised in the same manner, become dry. These banks are found of all depths, at all

Island. all distances from shore, entirely unconnected with the land, and detached from each other: although it often happens that they are divided by a narrow gut without bottom.

"Coral banks also grow, by a quick progression, towards the surface; but the winds, heaping up the coral from deeper water, chiefly accelerate the formation of these into shoals and islands. They become gradually shallower; and, when once the sea meets with resistance, the coral is quickly thrown up by the force of the waves breaking against the bank; and hence it is, that, in the open sea, there is scarce an instance of a coral bank having so little water that a large ship cannot pass over, but it is also so shallow that a boat would ground on it.

"I have seen these coral banks in all the stages; some in deep water, others with few rocks appearing above the surface; some just formed into islands, without the least appearance of vegetation; and others from such as have a few weeds on the highest part, to those which are covered with large timber, with a bottomless sea at a pistol-shot distance.

"The loose coral, rolled inward by the billows in large pieces, will ground; and the reflux being unable to carry them away, they become a bar to coagulate the sand, always found intermixed with coral; which sand, being easiest raised, will be lodged at top. When the sand-bank is raised by violent storms beyond the reach of common waves, it becomes a resting-place to vagrant birds, whom the search of prey draws thither. The dung, feathers, &c. increase the soil, and prepare it for the reception of accidental roots, branches, and seed, cast up by the waves, or brought thither by birds. Thus islands are formed: the leaves and rotten branches intermixing with the sand, form in time a light black mould, of which in general these islands consist; more sandy as less woody; and, when full of large trees, with a greater proportion of mould.

"Cocoa nuts, continuing long in the sea without losing their vegetative powers, are commonly to be found in such islands; particularly as they are adapted to all soils, whether sandy, rich, or rocky.

"The violence of the waves within the tropics, must generally be directed to two points, according to the monsoons.

"Hence the islands formed from coral banks must be long and narrow, and lie nearly in a meridional direction. For even supposing the banks to be round, as they seldom are when large, the sea, meeting most resistance in the middle, must heave up the matter in greater quantities there than towards the extremities: and, by the same rule, the ends will generally be open, or at least lowest. They will also commonly have soundings there, as the remains of the bank, not accumulated, will be under water.

"Where the coral banks are not exposed to the common monsoon, they will alter their direction; and be either round, extending the parallel, or be of irregular forms, according to accidental circumstances.

"The interior parts of these islands being sea, sometimes form harbours capable of receiving vessels of some burthen, and, I believe, always abound greatly with fish; and, such as I have seen, with turtle-

grass and other sea-plants, particularly one species, called by the Sooloos *gammye*, which grows in little globules, and is somewhat pungent, as well as acid, to the taste.

"It need not be repeated, that the ends of those islands only are the places to expect foundings; and they commonly have a shallow spit running out from each point.

"Abdul Roobin's observation points out another circumstance, which may be useful to navigators; by consideration of the winds to which any islands are most exposed, to form a probable conjecture which side has deepest water; and from a view which side has the shoals, an idea may be formed which winds rage with most violence."

Islands from their situation enjoy many great advantages, the principal of which are these. In the first place, many benefits are derived to the inhabitants of an island from its unity. The very largest country on a continent is still but a part, which implies dependence, and is necessarily attended with a train of imperfections; from all of which, by the unerring and unalterable laws of nature, the people who live in an island are or may be entirely free. All countries on the continent are exposed to continual dangers, against which their inhabitants must be perpetually upon their guard. This renders a large military force requisite. It involves them in continual negotiations, leagues, and alliances; all of which, however, cannot exempt them from frequent wars, or the miseries that attend them, and which have commonly bad effects on their internal policy. In the next place, the climate is generally mild and salubrious from the vapours of the surrounding sea, which according to the latitude abates the violence of heat, and moderates the rigour of cold, both which are sensibly and constantly less than on continents under the same elevation of the pole. We have a remarkable instance of this in the islands called anciently *Stebades*, in the modern Latin *Insule Arcarum*, by us the islands of *Hierres*. They are three in number, lying in 43° north latitude, before the port of Toulon. In them, the fruits of France and Italy arrive at the highest perfection, and all the medical herbs of Italy, Greece, and Egypt, grow wild. Yet the climate is wonderfully temperate and pleasant in all seasons*.—There is also commonly a greater variety, and always a greater fertility, in the soil, occasioned, *See Annales* chiefly by the warmth of the circumambient air, frequent showers, and, in consequence of both, being continually impregnated with vegetable salts. Another considerable advantage arises from its accessibility on every side, by which it is open to receive supplies from other countries, and has the convenience of exporting its commodities and manufactures to all markets, and, in comparison of the continent, at all seasons. The opposite sides of an island may in regard to commerce be considered as two countries; each has its ports, its proper commodities, its proper correspondencies; in consequence of which, it promotes the cultivation, and procures vent for the manufactures, of a large district behind it; while the intermediate midland space finds a profit in that inland trade, which these two districts supply. The winds contrary on one side are favourable on the other; and the sea, the common road to both.

Island.

both coasts, is continually ploughed by vessels outward and homeward bound, which keeps up that active and enterprising spirit which characterizes islanders. An island has at once the most extensive and the most effectual frontier, and this on all sides, subsisting for ever, without repairs, and without expence: and, which is still more, derives from this very frontier a great part of the subsistence of its inhabitants, and a valuable article in its commerce, from its fisheries. It is commonly said the sea is a mine, but in truth it is better; its treasures are more lasting and more certain, procured by labour solely, and fit for use or for sale as soon as procured, quickly consumed, and thereby the source of continual employment to a stout, hardy, laborious race of men, who likewise find employment for numbers, and are in various respects otherwise beneficial members of the community. The defence of this natural barrier, which, as we have said, costs nothing, but on the contrary yields much, is not only permanent, but in every respect more to be relied on than any that could be raised by the skill and industry of men at the greatest expence. All these blessings and benefits are insured by the lesson that Nature dictates, some would say the law which she prescribes, to the inhabitants of every island, to place all their hopes in the assiduous cultivation of their own country, to bend all their endeavours to raising and extending their commerce, and to put their trust in Providence, and in the safeguard which she directs; men accustomed to robust and hardy exercises, and in what necessarily arises from their way of life, a naval force. The first inhabitants come in vessels, are for a time dependent on the country from whence they came, arrive at independence by enlarging their correspondence: and thus commerce is natural and essential to the people of an island; which is the reason that they thrive so long as they possess it, and gradually decline in the same proportion in which that decays.

ISLANDS of Ice. See *Ice-Island*.

Floating-ISLANDS. Histories are full of accounts of floating islands; but the greatest part of them are either false or exaggerated. What we generally see of this kind is no more than the concretion of the lighter and more viscous matter floating on the surface of the water in cakes; and, with the roots of the plants, forming congeries of different sizes, which, not being fixed to the shore in any part, are blown about by the winds, and float on the surface. These are generally found in lakes, where they are confined from being carried too far; and, in process of time, some of them acquire a very considerable size. Seneca tells us of many of these floating islands in Italy; and some later writers have described not a few of them in other places. But, however true these accounts might have been at the time when they were written, very few proofs of their authenticity are now to be found; the floating islands having either disappeared again, or been fixed to the sides in such a manner as to make a part of the shore. Pliny tells us of a great island which at one time swam about in the lake Cutilia in the country of Reatinum, which was discovered to the old Romans by a miracle; and Pomponius tells us, that in Lydia there were several islands so loose in their foun-

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dations, that every little accident shook and removed them.

ISLAND (or Iceland) Crystal. See *CRYSTAL (Ice-land)*.

ISLE-ADAM, a town of France, with a handsome castle, and the title of a baron; seated on the river Oise, three miles from Beaumont, and 20 from Paris. E. Long. 2. 13. N. Lat. 49. 7.

ISLE-de-Dieu, a small island of France in the sea of Gascony, and on the coast of Poitou, from which it is 14 miles. W. Long. 2. 5. N. Lat. 46. 45.

ISLE-de-France, is one of the 12 general governments of France; bounded on the north by Picardy, on the west by Normandy, on the south by the government of Orleans, and on the east by that of Champagne. It is about 90 miles in length, and as much in breadth; and is watered by the rivers Seine, Marne, Oise, and Aisne. The air is temperate, and the soil fertile; and it abounds in wine, corn, and fruits. It contains 10 small districts, and Paris is the capital city.

ISLEBIANS, in ecclesiastical history, a name given to those who adopted the sentiments of a Lutheran divine of Saxony, called John Agricola, a disciple and companion of Luther, a native of Isleb, whence the name; who interpreting literally some of the precepts of St Paul with regard to the Jewish law, declaimed against the law and the necessity of good works. See *ANTINOMIANS*.

ISLINGTON, a village of Middlesex, on the north side of London, to which it is almost contiguous. It appears to be of Saxon origin; and in the conqueror's time was written Iledon, or Iledon. The church is one of the prebends of St Paul's; to the dean and chapter of which a certain precinct here belongs, for the probate of wills, and granting administrations. The church was a Gothic structure, erected in 1503, and stood till 1751, when the inhabitants applied to parliament for leave to rebuild it, and soon after erected the present structure, which is a very substantial brick edifice, though it does not want an air of lightness. Its houses are above 2000, including the Upper and Lower Holloways, three sides of Newington-Green, and part of Kingland, on the road to Ware. The White Conduit-house in this place, so called from a white stone conduit that stands before the entrance, has handsome gardens with good walks, and two large rooms one above the other for the entertainment of company at tea, &c. In the S. W. part of this village is that noble reservoir, improperly called New-River Head; though they are only two basons, which receive that river from Hertfordshire, and from whence the water is thrown by an engine into the company's pipes for the supply of London. In the red-moat on the north side of these basons, called Six-Acre-Field, from the contents of it, which is the third field beyond the White-Conduit, there appears to have been a fortress in former days, inclosed with a rampart and ditch, which is supposed to have been a Roman camp made use of by Suetonius Paulinus after his retreat, which Tacitus mentions, from London, before he sallied thence, and routed the Britons under their queen Boadicea; and that which is vulgarly, but erroneously, called Jack Straw's castle, in a square place in the S. W. angle of the field, supposed to have been the seat

Island

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seat of the Roman general's pretorium or tent. In this parish are two charity-schools; one founded in 1613 by Dame Alice Owen, for educating 30 children. This foundation, together with that of a row of almshouses, are under the care of the brewers company. Here is an hospital with its chapel, and a workhouse for the poor. There is a spring of chalybeate water, in a very pleasant garden, which for some years was honoured by the constant attendance of the princess Amelia, and many persons of quality, who drank the waters. To this place, which is called New Tunbridge Wells, many people resort, particularly during the summer, the price of drinking the waters being 10s. 6d. for the season. Near this place is a house of entertainment called Saddler's Wells, where, during the summer season, people are amused with balance-masters, walking on the wire, rope-dancing, tumbling, and pantomime entertainments.

ISLIP, a town of Oxfordshire, 56 miles from London, is noted for the birth and baptism of Edward the Confessor. By the late inland navigation, it has communication with the rivers Mersey, Dee, Ribble, Ouse, Trent, Darwent, Severn, Humber, Thames, Avon, &c. which navigation, including its windings, extends above 500 miles, in the counties of Lincoln, Nottingham, York, Lancaster, Westmoreland, Chester, Stafford, Warwick, Leicester, Oxford, Worcester, &c. It has a good market for sheep, and some remains of an ancient palace, said to have been king Ethelred's. Here is a charity-school. The chapel wherein Edward was baptized stood at a small distance north from the church, is still called the king's chapel, was entirely defaced during Cromwell's usurpation, and converted to the meanest uses of a farm-yard; at present it has a roof of thatch. It is built of stone 15 yards long and 7 broad, and retains traces of the arches of an oblong window at the east end. This manor was given by Edward the Confessor to Westminster abbey, to which it still belongs.

ISMAELITES, the descendants of Ismael; dwelling from Havila to the wilderness of Sur, towards Egypt, and thus overspreading Arabia Petræa, and therefore Josephus calls Ismael the founder of the Arabs.

ISMARUS (anc. geog.), a town of the Cicones in Thrace, giving name to a lake. In Virgil it is called Ismara. Servius supposes it to be a mountain of Thrace; on which mountain Orpheus dwelt.

ISNARDIA, in botany: A genus of the monogynia order, belonging to the tetrandria class of plants; and in the natural method ranking under the 17th order, *Calycanthemæ*. There is no corolla; the calyx is quadrifid; the capsule quadrilocular, and girt with the calyx.

ISNY, an imperial town of Germany, in Suabia, and in Algow; seated on the river Isny, in E. Long. 9. 10. N. Lat. 47. 33.

ISNIC, a town of Turkey in Asia, and in Natolia, with a Greek archbishop's see. It is the ancient Nice, famous for the first general council held here in 325. There is now nothing remaining of its ancient splendor but an aqueduct. The Jews inhabit the greatest part of it; and it is seated in a country fertile in corn and excellent wine. E. Long. 30. 9. N. Lat. 47. 15.

ISOCHRONAL, is applied to such vibrations of

a pendulum as are performed in the same space of Isochronal time; as all the vibrations or swings of the same pendulum are, whether the arches it describes are shorter or longer.

ISOCHRONAL-Line, that in which a heavy body is supposed to descend without any acceleration.

ISOCRATES, one of the greatest orators of Greece, was born at Athens, 436 B. C. He was the son of Theodorus, who had enriched himself by making musical instruments, and gave his son a liberal education. Isocrates was the disciple of Prodicus, Gorgias, and other great orators. He endeavoured at first to declaim in public, but without success; he therefore contented himself with instructing his scholars, and making private orations. He always showed great love for his country; and being informed of the loss of the battle of Cheronea, he abstained four days from eating, and died, aged 98. There are still extant 21 of his discourses or orations, which are excellent performances, and have been translated from the Greek into Latin by Wolfius. Isocrates particularly excelled in the justness of his thoughts, and the elegance of his expressions. There are also nine letters attributed to him.

ISOETES, in botany; a genus of the natural order of filices, belonging to the cryptogamia class of plants. The antheræ of the male flower are within the base of the frons or leaf. The capsule of the female flower is bilocular, and within the base of the leaf.

ISOLA, a town of Italy, in the kingdom of Naples, and in the Farther Calabria, with a bishop's see. It is a sea port town, and is seated 15 miles south-east of St Severina. E. Long. 7. 33. N. Lat. 39. 1.

ISOPERIMETRICAL FIGURES, in geometry, are such as have equal perimeters or circumferences.

ISOPYRUM, in botany: A genus of the polygynia order, belonging to the polyandria class of plants; and in the natural method ranking under the 26th order, *Multifloræ*. There is no calyx, but five petals; the nectaria trifid and tubular; the capsules recurved and polyspermous.

ISOSCELES TRIANGLE, in geometry, one that has two equal sides.

ISPAHAN, or, as the Persians pronounce it, *Spau-hawn*, the capital of Persia, is situated in the province of Irac, Agemi, or Persia Proper, upon the ruins, as generally supposed, of the ancient Hecatompylos, or, as others think, of the Aspa of Ptolemy. Most of the eastern astronomers and geographers place it in N. Lat. 32. 25. E. Long. 86. 40. It stands in a very extensive plain, surrounded by mountains; and has eight districts belonging to it, that contain about 400 towns and villages. The fertility of the soil, the mildness of the seasons, and the fine temperature of the air, all conspire to render Isfahan one of the most charming and delightful cities in the world. It is unanimously agreed, that the present city is of no great antiquity; and the two parts into which it is divided, preserve the names of two contiguous towns, from the junction of which it was formed. The inhabitants of these, notwithstanding their neighbourhood, bear an inveterate antipathy to each other; which they discover on all public occasions. Spauhawn

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owes the glory it now possesses to the great Shah Abbas; who, after the conquest of the kingdoms of Lar and Ormus, charmed with the situation of this place, made it the capital of his empire, between the years 1620 and 1628. The mountains, with which this city is surrounded, defend it alike from the sultry heats of summer and the piercing winds of the winter season; and the plain on which it stands is watered by several rivers, which contribute alike to its ornament and use. Of these rivers, the Zenderoud, after being joined by the Mahmood, passes by Spauhawn; where it has three fine bridges over it, and is as broad as the Seine at Paris. The waters of these united streams are sweet, pleasant, and wholesome, almost beyond comparison; as, indeed, are all the springs found in the gardens belonging to the houses of Spauhawn. The extent of Spauhawn is very great; not less, perhaps, than 20 miles within the walls, which are of earth, poorly built, and so covered with houses and shaded with gardens, that in many places it is difficult to discover them. The Persians are wont to say, *Spauhawn nisfigehon*, i. e. Spauhawn is half the world. Sir John Chardin says, that though some reckoned 11,000,000 inhabitants in it, he did not himself look upon it as more populous than London. At a distance, the city is not easily distinguished; for many of the streets being adorned with plantains, and every house having its garden, the whole looks like a wood. The streets in general are neither broad nor convenient; there being three great evils which attend them: the first is, that being built on common sewers, these are frequently broke up, which is very dangerous, considering that most people are on horseback; the second is, that there are many wells or pits in them, which are not less dangerous; the third arises from the people's emptying all their ordure from the tops of their houses: this last, indeed, is in some measure qualified by the dryness of the air, and by its being quickly removed by the peasants, who carry it away to dung their grounds. Some reckon eight, and others ten gates, besides posterns; but all agree that there is no difficulty of entering at any hour of the day or night. The three principal suburbs annexed to it are, Abbasabad, built by Shah Abbas, and belonging to the people of Tauris; Julfa, inhabited by a colony of Armenians, called by some *New Julfa*, to distinguish it from the ancient city of that name, situated in Armenia, upon the Araxes, whence the original inhabitants of New Julfa were brought; and Ghebr-Abad, or, as the Arabs pronounce it, Kebr-Abad, the street of the magians, occupied entirely by the professors of magism, or the religion of the ancient Persians. The river Zenderoud separates the city of Ispahan and Abbas-Abad from Julfa and Ghebr-Abad. This city has suffered greatly since the commencement of the dreadful rebellion in 1721; the whole kingdom from that period, till a few years ago, having been almost a continued scene of blood, ravages, and confusion. A celebrated modern traveller, who was on the spot, tells us, that the inhabitants of Julfa, not many years before the above revolution happened, amounted to 30,000 souls; had 13 churches, and above 100 priests; and paid the Persian court 200 tomans yearly for the free exercise of their religion: that some of the streets were broad and handsome, and planted with

trees, with canals and fountains in the middle; others narrow and crooked, and arched a-top; others again, though extremely narrow, as well as turning and winding many ways, were of an incredible length, and resembled so many labyrinths: that, at a small distance from the town, there were public walks adorned with plane-trees on either hand, and ways paved with stones, fountains, and cisterns: that there were above 100 caravanferas for the use of merchants and travellers, many of which were built by the kings and prime nobility of Persia: that, as little rain fell there, the streets were frequently full of dust, which rendered the city disagreeable during a considerable part of the summer; that the citizens, however, to make this inconvenience more tolerable, used to water them when the weather was warmer than usual: that there was a castle in the eastern part of the town, which the citizens looked upon as impregnable, in which the public money, and most of the military stores, were said to be kept: that, notwithstanding the baths and caravanferas were almost innumerable, there was not one public hospital: that most of the public buildings were rather neat than magnificent, though the great meydan or market-place, the royal palace (which is three quarters of a league in circumference), and the alley denominated *Tober-bag* adjoining to it, made a very grand appearance: that the former contained the royal mosque; the building denominated *kayserich*, where all sorts of foreign commodities were exposed to sale; and the mint, styled by the Persians *feraa-kboneh*, where the current-money of the kingdom was coined: that, besides the native Persians, there were then in Ispahan above 10,000 Indians all supported by trade; 20,000 Georgians, Circassians, and Tartars of Daghestan or Lesgees, with a considerable number of English, Dutch, Portuguese, and a few French: that the Capachins, discalceated or bare-footed Carmelites, Jesuits, Dominicans, and Austin friars, had likewise their convents here, though they were unable to make any converts; and that there were above 100 mosques and public colleges. But since the fatal period above-mentioned, the suburb of Julfa was almost totally abandoned by the Armenians. The government of Ispahan, 23 leagues long and as many broad, comprehending several districts, most of them formerly well peopled, appeared not many years ago little better than a desert; most of the inhabitants of that fertile and delightful tract being fled and dispersed. Multitudes of them had taken a precarious refuge in the mountains of Loristan, lying between Ispahan and Sufter, whose lands were left untilled, and their houses mouldered into ruins. In short, all the distresses of an unsuccessful war, or the invasion of a barbarous enemy, could not have plunged the people of Ispahan into greater misery than the victories of their tyrannical king Nadir Shah, who seemed more solicitous to humble his own subjects than his enemies. See PERSIA.

ISPIDA, in ornithology. See ALCEDO.

ISRAEL, the name which the angel gave Jacob, after having wrestled with him all night at Mahanaim or Peniel (Gen. xxxii. 1, 2, and 28, 29, 30. and Hosea xii. 3.) It signifies *the conqueror of God*, or *a prince of God*, or, according to many of the ancients, *a man who sees God*.

By the name of Israel is sometimes understood the person

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Israelites
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person of Jacob; sometimes the whole people of Israel, or the whole race of Jacob; and sometimes the kingdom of Israel, or of the ten tribes, distinct from the kingdom of Judah.

ISRAELITES, the descendants of Israel; who were at first called *Hebrews*, by reason of Abraham, who came from the other side of the Euphrates; and afterwards *Israelites*, from Israel the father of the twelve patriarchs; and lastly *Jews*, particularly after their return from the captivity of Babylon, because the tribe of Judah was then much stronger and more numerous than the other tribes, and foreigners had scarce any knowledge of this tribe.

ISSACHAR, one of the divisions of Palestine by tribes; lying to the south of Zabulon, so as by a narrow slip to reach the Jordan, between Zabulon and Manasseh, Josh. xix. But whether it reached to the sea, is a question; some holding that it did: an assertion not easy to be proved, as Joshua makes no mention of the sea in this tribe, nor does Josephus extend it farther than to mount Carmel; and in Josh. xvii. 10. Asher is said to touch Manasseh on the north, which could not be if Issachar extended to the sea.

ISSOUDUN, a considerable town of France, in Berry. It carries on a great trade in wood, cattle, cloth, hats, and stockings; is seated partly on a plain, and partly on an eminence. E. Long. 2. 5. N. Lat. 46. 57.

ISSUE, in common law, has various applications; being sometimes taken for the children begotten between a man and his wife—sometimes, for profits growing from amercements or fines—sometimes, for profits of lands and tenements—but more frequently for the point of matter depending in suit, wheresoon the parties join, and put their cause to the trial of the jury.

In all these occasions, issue has but one signification, which is, an effect of a cause preceding; as the children are the effect of the marriage between the parents; the profits growing to the king or lord, from the punishment of any man's offence, are the effect of his transgression; the point referred to the trial of twelve men, is the effect of pleading, or process. See *PLEA and Issue*.

ISSUES, in surgery, are little ulcers made designedly by the surgeon in various parts of the body, and kept open by the patient, for the preservation and recovery of his health.

ISSUS, now AJAZO, a town of Cilicia in Natolia, with a harbour on the Levant Sea, a little to the north of Scanderoon. E. Long. 36. 25. N. Lat. 36. 56.

Near this place, in a difficult pass between the mountains and the sea, Alexander the Great fought his second battle with Darius. One great cause of the defeat which the Persians received here was the bad conduct of their monarch, who led his numerous forces into a narrow place, where they had not room to act. Alexander was so much surprised when he first received the news that Darius was behind him, that he could scarce believe it to be true: but when he was thoroughly satisfied of the fact, and that Darius had again passed the river Pinarus, he called a council of war, wherein, without asking any body's advice, he only told them, that he hoped they would remember their former actions; and that they,

who were always conquerors, were about to fight people who were always beat. He further observed, that Darius seemed to be infatuated, since he had with such expedition quitted an open and campaign country, where his numbers might have acted with advantage, to fight in a place inclosed, where the Macedonian phalanx might be well drawn up, and where his numbers could only incommode him. He then made the necessary dispositions for repassing the mountains, posted guards where he found them necessary and then commanded his troops to refresh themselves, and to take their rest till morning.

At break of day he began to repass the mountains, obliging his forces to move in close order where the road was narrow, and to extend themselves as they had more room; the right wing keeping always close to the mountain, and the left to the sea-shore. On the right there was a battalion of heavy-armed troops, besides the targeteers under the command of Nicanor the son of Parmenio. Next these, extending to the phalanx, were the corps of Cœnus and Perdicas; and on the left, the respective bodies commanded by Amyntas, Ptolemy, and Meleager. The foot appointed to support them were commanded by Craterus; but the whole left wing was committed to Parmenio, with strict orders not to decline from the sea-shore, lest the Persians should surround them. Darius ordered 20,000 foot and 30,000 horse to retire, finding that he already wanted room to draw up the rest. His first line consisted of 30,000 Greek mercenaries, having on their right and left 60,000 heavy-armed troops, being the utmost the ground would allow. On the left, towards the mountain, he posted 20,000 men, which, from the hollow situation of the place, were brought quite behind Alexander's right wing. The rest of his troops were formed into close and useless lines behind the Greek mercenaries, to the number in all of 600,000 men. When this was done, he suddenly recalled the horse who had retired, sending part of them to take post on his right against the Macedonians commanded by Parmenio; and the rest he ordered to the left towards the mountain: but, finding them unserviceable there, he sent the greatest part of them to the right; and then took upon himself, according to the custom of the Persian kings, the command of the main body. As soon as Alexander perceived that the weight of the Persian horse was disposed against his left wing, he dispatched, with as much secrecy as he could, the Thessalian cavalry thither, and supplied their places on the right by some brigades of horse from the van, and light-armed troops. He also made such dispositions, that, notwithstanding the mighty advantage of the hollow mountain, the Persians could not surround him. But, as these precautions had considerably weakened the centre of his army, he ordered those advanced posts on the enemy's left, of which he was most apprehensive, to be attacked at the very beginning of the fight; and, when they were easily driven from them, he recalled as many troops as were necessary to strengthen his centre.

When all things were in order, Alexander gave strict command, that his army should march very slowly. As for Darius, he kept his troops fixed in their posts, and in some places threw up ramparts; whence the

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Macedonians rightly observed, that he thought himself already a prisoner. Alexander at the head of the right wing engaged first, and without any difficulty broke and defeated the left wing of Darius. But, endeavouring to pass the river Pinarus after them, his troops in some measure losing their order, the Greek mercenaries fell upon them in flank, and made them fight, not only for victory, but for their lives. Ptolemy the son of Seleucus, and 120 Macedonians of some rank, were killed upon the spot. But the foot next to Alexander's right wing coming in seasonably to its relief, fell upon the mercenaries in flank, amongst whom a dreadful carnage was made; they being in a manner surrounded by the horse and light-armed troops, which at first pursued the left wing, and the foot that now passed the river. The Persian horse on the right still fought gallantly; but, when they were thoroughly informed of the rout of their left wing and of the destruction of the Greek mercenaries, and that Darius himself was fled, they began to break, and betake themselves to flight also. The Thessalian cavalry pursued them close at the heels; and the narrow craggy roads incommoded them exceedingly, so that vast numbers of them perished. As for Darius, he fled, soon after the left wing was broken, in a chariot with a few of his favourites: as far as the country was plain and open, he escaped well enough; but, when the roads became rocky and narrow, he quitted it, and, mounting a horse, rode all the night: his chariot, in which were his cloak and his bow, fell into the hands of Alexander, who carried them back to his camp.

In respect to the battle of Iffus, Diodorus informs us, that Alexander looked every where about for Darius; and, as soon as he discovered him, with his handful of guards attacked him and the flower of the Persian army which was about him; being as desirous of obtaining this victory by his personal valour, as of subduing the Persian empire by the courage of his soldiers. But when Oxathres, the brother of Darius, saw Alexander's design, and how fiercely he sought to accomplish it, he threw himself, with the horse who were about him, between his brother's chariot and the enemy, where an obstinate fight was maintained, till the dead bodies rose like an entrenchment about the chariot of Darius. Many of the Persian nobility were slain, and Alexander himself was wounded in the thigh. At last, the horses in the chariot of Darius started, and became so unruly, that the king himself was forced to take the reins; the enemy, however, pressed so hard upon him, that he was constrained to call for another chariot, and mounted it in great danger. This was the beginning of the rout, which soon after became general. According to this author, the Persians lost 200,000 foot, and 10,000 horse; the Macedonians 300 foot, and 150 horse.

Justin informs us, that the Persian army consisted of 400,000 foot, and 100,000 horse. He says, that the battle was hard fought; that both the kings were wounded; and that the Persians still fought gallantly when their king fled, but that they were afterwards speedily and totally routed: he is very particular as to their loss, which he says amounted to 61,000 foot, 10,000 horse, and 40,000 taken prisoners; of the Macedonians he says there fell no more than 130 foot, and

150 horse. Curtius says, that of the Persians there fell 100,000 foot, and 10,000 horse: of Alexander's army 504, he says, were wounded; 32 foot and 150 horse killed. That we may not suspect any error in transcribers, his own observation confirms the fact: *Tantulo impendio ingens victoria fletit*, "So small was the cost of so great a victory."

ISTHMA, or *ISTHMIAN Games*; one of the four solemn games which were celebrated every fifth year in Greece. They had the name from the Isthmus of Corinth, where they were celebrated. In their first institution, according to Pausanias, they consisted only of funeral rites and ceremonies in honour of Melicertes: but Theseus afterwards, as Plutarch informs us, in emulation of Hercules, who had appointed games at Olympia in honour of Jupiter, dedicated those to Neptune, his reputed father, who was regarded as the particular protector of the Isthmus and commerce of Corinth. The same trials of skill were exhibited here as at the other three sacred games; and particularly those of music and poetry. These games, in which the victors were only rewarded with garlands of pine-leaves, were celebrated with great magnificence and splendor as long as paganism continued to be the established religion of Greece; nor were they omitted even when Corinth was sacked and burnt by Mummius the Roman general; at which time the care of them was transferred to the Sicyonians, but was restored again to the Corinthians when their city was rebuilt.

ISTHMUS, a narrow neck, or slip of ground, which joins two continents; or joins a peninsula to the terra firma, and separates two seas. See PENINSULA.

The most celebrated isthmuses are, that of Panama or Darien, which joins North and South America; that of Suez, which connects Asia and Africa; that of Corinth, or Peloponnesus, in the Morea; that of Crim-Tartary, otherwise called *Taurica Chersonesus*; that of the peninsula Romania, and Erisso, or the isthmus of the Thracian Chersonesus, twelve furlongs broad, being that which Xerxes undertook to cut through. The ancients had several designs of cutting the isthmus of Corinth, which is a rocky hillock, about ten miles over; but they were all in vain, the invention of sluices being not then known. There have been attempts too for cutting the isthmus of Suez, to make a communication between the Red Sea and the Mediterranean: but these also failed; and in one of them, a king of Egypt is said to have lost 120,000 men.

ISTRIA, a peninsula of Italy, in the territory of Venice, lying in the north part of the Adriatic sea. It is bounded by Carniola on the north; and on the south, east, and west, by the sea. The air is unwholesome, especially near the coast; but the soil produces plenty of wine, oil, and pastures; there are also quarries of fine marble. One part of it belongs to the Venetians, and the other to the house of Austria. Cabo d'Istria is the capital town.

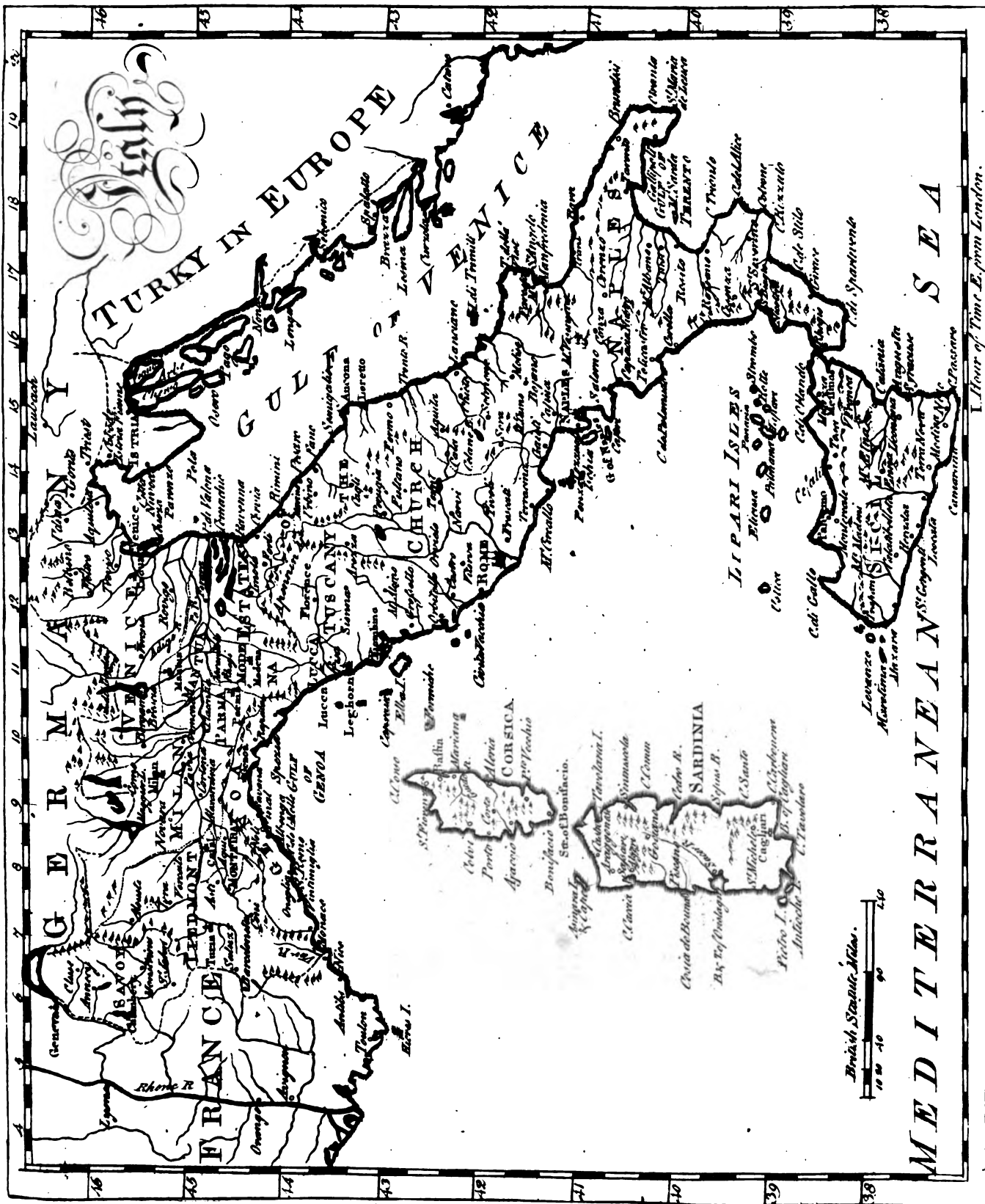
ITALIAN, the language spoken in Italy. See the article LANGUAGE.

This tongue is derived principally from the Latin; and of all the languages formed from the Latin, there is

Isthmia

Italian.

ROND



1845. S. 40.

Hour of Time E. from London.

Italian
||
Italy.

none which carries with it more visible marks of its original than the Italian.

It is accounted one of the most perfect among the modern tongues. It is complained, indeed, that it has too many diminutives and superlatives, or rather augmentatives; but without any great reason: for if those words convey nothing farther to the mind than the just ideas of things, they are no more faulty than our pleonasm and hyperboles.

The language corresponds to the genius of the people, who are slow and thoughtful: accordingly, their language runs heavily, though smoothly; and many of their words are lengthened out to a great degree. They have a great taste for music; and to gratify their passion this way, have altered abundance of their primitive words; leaving out consonants, taking in vowels, softening and lengthening out their terminations, for the sake of the cadence.

Hence the language is rendered extremely musical, and succeeds better than any other in operas and some parts of poetry: but it fails in strength and nervousness; and a great part of its words, borrowed from the Latin, become so far disguised, that they are not easily known again.

The multitude of sovereign states into which Italy is divided, has given rise to a great number of different dialects in that language; which, however, are all good in the place where they are used. The Tuscan is usually preferred to the other dialects, and the Roman pronunciation to that of the other cities; whence the Italian proverb, *Lingua Toscana in bocca Romana*.

The Italian is generally pretty well understood throughout Europe; and is frequently spoken in Germany, Poland, and Hungary. At Constantinople in Greece, and in the ports of the Levant, the Italian is used as commonly as the language of the country: indeed in those places it is not spoken so pure as in Tuscany, but is corrupted with many of the proper words and idioms of the place; whence it takes a new name, and is called *Frank Italian*.

ITALIC CHARACTER, in printing. See LETTER.

ITALICA (anc. geog.), a town of Baetica in Spain, built by Scipio Africanus, after finishing the Spanish war, for the reception of the wounded soldiers. At first it was a municipium; afterwards a colony: which was a matter of wonder to the emperor Adrian, the privileges of a municipium being beyond those of a colony (Gellius). Famous for being the birth-place of the emperors Trajan and Adrian, and of the poet Silius Italicus. Now *Sevilla Vieja*, scarce four miles from Seville; a small village of Andalusia on the Guadalquivir.—*Corfinium* in Italy was thus also called.

ITALY, one of the finest countries of Europe, lying between 7 and 10 degrees of E. Long. and between 37 and 46 degrees of N. Lat. On the north, north west, and north-east, it is bounded by France, Switzerland, the country of the Grisons, and Germany; on the east, by the Adriatic sea or gulf of Venice; and on the south and west, by the Mediterranean; its figure bearing some resemblance to that of a boot. Its length from Aosta, at the foot of the Alps in Savoy, to the utmost verge of Calabria, is about 600 miles; but its breadth is very unequal,

being in some places near 400 miles, in others not above 25 or 30.

Italy was anciently known by the names of *Saturnia*, *Oenotria*, *Hesperia*, and *Aufonia*. It was called *Saturnia* from Saturn; who, being driven out of Crete by his son Jupiter, is supposed to have taken refuge here. The names of *Oenotria* and *Aufonia*, is borrowed from its ancient inhabitants the Oenotrians and Aufones; and that of *Hesperia* or *Western* was given it by the Greeks, from its situation with respect to Greece. The names of *Italia* or *Italy*, which in process of time prevailed over all the rest, is by some derived from *Italus*, a king of the Siculi: by others, from the Greek word *Italos*, signifying an ox; this country abounding, by reason of its rich pastures, with oxen of an extraordinary size and beauty. All these names were originally peculiar to particular provinces of Italy, but afterwards applied to the whole country.

This country, like most others, was in ancient times divided into a great number of petty states and kingdoms. Afterwards when the Gauls settled in the western, and many Greek colonies in the eastern parts, it was divided, with respect to its inhabitants, into three great parts, viz. Gallia Cisalpina, Italy properly so called, and Magna Græcia. The most western and northern parts of Italy were in great part possessed by the Gauls; and hence took the name of *Gallia*, with the epithets of *Cisalpina* and *Citerior*, because they lay on the side of the Alps next to Rome; and *Togata*, with relation to the Roman gown or dress which the inhabitants used: but this last epithet is of a much later date than the former. This appellation was antiquated in the reign of Augustus, when the division of Italy into eleven provinces, introduced by that prince, took place. Hence it is that the name of *Cisalpine Gaul* frequently occurs in the authors who flourished before, and scarce ever in those who wrote after, the reign of Augustus. This country extended from the Alps and the river Varus, parting it from Transalpine Gaul, to the river Aefus; or, as Pliny will have it, to the city of Ancona, in the ancient Picenum. On the north, it was divided from Rætia by the Alps, called *Alpes Rætice*; and from Illyricum by the river Formio: but on this side, the borders of Italy were, in Pliny's time, extended to the river Arsia in Istria. On the south, it reached to the Ligustic sea, and the Apennines parting it from Etruria; so that under the common name of *Cisalpine Gaul* were comprehended the countries lying at the foot of the Alps, called by Pliny and Strabo the *Subalpine countries*, Liguria, Gallia Cispadana, and Transpadana. Italy, properly so called, extended; on the coast of the Adriatic, from the city of Ancona to the river Trento, now the Fortore; and on the Mediterranean, from the Macra to the Silarus, now the Sele. Magna Græcia comprised Apulia, Lucania, and the country of the Brutii. It was called *Greece*, because most of the cities on the coast were Greek colonies. The inhabitants gave it the name of *Great*, not as if it was larger than Greece, but merely out of ostentation, as Pliny informs us.

All these countries were inhabited by a great number of different nations settled at different times, and from many different parts. The names of the most remarkable

Italy.

its different names.

Italy. remakable of them were the *Aborigines*, or those whose origin was utterly unknown, and consequently were thought to have none; the *Sabines*, *Helurians* or *Tuscans*, the *Umbri*, *Samnites*, *Campani*, *Apulii*, *Calabrians*, *Lucanians*, the *Brutii*, and the *Latins*. From a colony of the latter proceeded the Romans, who gradually subdued all these nations one after another, and held them in subjection for upwards of 700 years. All these nations were originally brave, hardy, temperate, and well skilled in the art of war; and the Romans much more so than the rest. Their subjection to Rome, however, inured them to slavery; their oppression by the emperors broke their spirit; and the vast wealth which was poured into the country from all parts of the world, during the time of the Roman prosperity, corrupted their manners, and made them degenerate from their former valour. Of this degeneracy the barbarous nations of the north took the advantage to invade the empire in innumerable multitudes. Though often repelled, they never failed to return; and it was found necessary to take great numbers of them into the Roman service, in order to defend the empire against the rest of their countrymen. In the year 476, the *Heruli*, presuming on the services they had done the empire, demanded a third part of the lands of Italy; and being refused, chose one Odoacer, a man of low birth, but of great valour and experience, for their king; and having totally destroyed the remains of the Roman empire, proclaimed Odoacer king of Italy. The new monarch, however, did not think proper to alter the Roman form of government, but suffered the people to be governed by the senate, consuls, &c. as before. He enjoyed his dignity in peace till the year 488, when Zeno, emperor of Constantinople, being hard pressed by Theodoric king of the *Ostrogoths*, advised him to turn his arms against Odoacer, whom he could easily overcome, and thus make himself sovereign of one of the finest countries in the world.

Subdued by the Romans.
By the Heruli.
Invaded by Theodoric the Ostrogoth.
Odoacer defeated.
Theodoric accepted the proposal with great joy, and set out for Italy, attended by an infinite number of people, carrying with them their wives, children, and effects, on waggons. Several Romans of great distinction attended him in this war; while, on the other hand, many of his countrymen chose to remain in Thrace, where they became a separate nation, and lived for a long time in amity with the Romans. The Goths, being destitute of shipping, were obliged to go round the Adriatic. Their march was performed in the depth of winter; and during the whole time, a violent famine and plague raged in their army. They were also opposed by the *Gepidæ* and *Sarmatians*; but at last having defeated these enemies, and overcome every other obstacle, they arrived in Italy in the year 489. Theodoric advanced to the river *Sontius*, now *Zonzo*, near *Aquileia*, where he halted for some time to refresh his troops. Here he was met by Odoacer at the head of a very numerous army, but composed of many different nations commanded by their respective chiefs, and consequently without sufficient union or zeal for the common cause. Theodoric therefore gained an easy victory, cut many of his enemies in pieces, and took their camp. Odoacer retired to the plains of *Verona*, and encamped there at a small distance from the city; but Theodoric pursued him close,

Italy. and soon forced him to a second engagement. The Goths obtained another victory; but it cost them dear. Odoacer's men made a much better resistance than before, and great numbers fell on both sides. The victory, however, was so far decisive, that Odoacer was obliged to shut himself up in *Ravenna*; so that Theodoric having now no enemy to oppose him in the field, besieged and took several important places, and among the rest *Milan* and *Pavia*. At the same time, *Tufa*, commander in chief of Odoacer's forces, deserted to the enemy with the greatest part of the troops he had with him, and was immediately employed in conjunction with a Gothic officer in pursuit of his sovereign. Odoacer had left that city, and was advanced as far as *Faenza*, where he was closely besieged by *Tufa*; but the traitor, declaring again for his old master, joined him with all his troops, and delivered up several officers that had been appointed by Theodoric to serve under him. These were sent in irons to *Ravenna*; and Odoacer being joined by *Frideric*, one of Theodoric's allies, with a considerable body of troops, once more advanced against his enemies. He recovered all *Liguria*, took the city of *Milan*, and at last besieged Theodoric himself in *Pavia*. The Goths, having brought all their families and effects along with them, were greatly distressed for want of room; and must have undoubtedly submitted, if their enemies had continued to agree among themselves. The quarrels of his followers proved the ruin of Odoacer. Theodoric, finding that the enemy remitted the vigour of their operations, applied for succours to *Alaric* king of the *Viligoths*, who had settled in *Gaul*. As the *Viligoths* and *Ostrogoths* were originally one and the same nation, and the *Viligoths* had received among them some years before a great number of *Ostrogoths* under the conduct of *Videmer* cousin-german to Theodoric, the supplies were readily granted. The inaction of the enemy gave these succours time to arrive; upon which Theodoric instantly joined them, and marching against his enemies gave them a total overthrow. Odoacer again took refuge in *Ravenna*, but was closely besieged by Theodoric in 490. The siege lasted three years; during which Odoacer defended himself with great bravery, and greatly annoyed the besiegers with his sallies. Theodoric, however, impatient of delay, leaving part of his army to blockade the city, marched with the rest against the strong holds which Odoacer had garrisoned. All these he reduced with little difficulty; and in 492 returned to the siege of *Ravenna*. The besieged were now reduced to great straits both by the enemy without and a famine within, the price of wheat being risen to six pieces of gold per bushel. On the other hand, the Goths were quite worn out with the fatigues of such a long siege; so that both parties being willing to put an end to the war, Odoacer sent *John* bishop of *Ravenna* to Theodoric with terms of accommodation. *Jornandes* informs us, that Odoacer only begged his life; which Theodoric bound himself, by a solemn oath, to grant him: but *Procopius* says, that they agreed to live together on equal terms. This last seems very improbable: but whatever were the terms of the agreement, it is certain that Theodoric did not keep them; for having a few days after invited Odoacer to a banquet, he dispatched him with his own hand.

Italy.

hand. All his servants and relations were massacred at the same time; except his brother Arnulphus, and a few more, who had the good luck to make their escape, and retired beyond the Danube.

8
Theodoric
proclaimed
king of Italy,
and uses
his power
with moderation.

Thus Theodoric became master of all Italy, and took upon himself the title of *king* of that country, as Odoacer had done before; though, with a pretended deference to the emperor of Constantinople, he sent messengers asking liberty to assume that title after he had actually taken it. Having secured his new kingdom as well as he could by foreign alliances, Theodoric next applied himself to legislation, and enacted many salutary laws besides those of the Romans which he retained. He chose Ravenna for the place of his residence, in order to be near at hand to put a stop to the incursions of the barbarians. The provinces were governed by the same magistrates that had presided over them in the times of the emperors, viz. the *consulares*, *correctores*, and *presides*. But besides these, he sent, according to the custom of the Goths, inferior judges, distinguished by the name of *counts*, to each city. These were to administer justice, and to decide all controversies and disputes. And herein the polity of the Goths far excelled that of the Romans. For in the Roman times a whole province was governed by a consularis, a corrector, or a *præses*, who resided in the chief city, and to whom recourse was to be had at a great charge from the most remote parts: but Theodoric, besides these officers, appointed not only in the principal cities, but in every small town and village, inferior magistrates of known integrity, who were to administer justice, and by that means save those who had law-suits the trouble and expence of recurring to the governor of the whole province; no appeals to distant tribunals being allowed, but in matters of the greatest importance, or in cases of manifest injustice.

Under the administration of Theodoric Italy enjoyed as great happiness as had been experienced under the very best emperors. As he had made no alteration in the laws except that above mentioned; so he contented himself with the same tributes and taxes that had been levied by the emperors; but was, on all occasions of public calamity, much more ready to remit them than most of the emperors had been. He did not treat the natives as those of the other Roman provinces were treated by the barbarians who conquered them. These stripped the ancient proprietors of their lands, estates, and possessions, dividing them among their chiefs; and giving to one a province with the title of *duke*, to another a frontier country with the title of *marquis*; to some a city with the title of *count*, to others a castle or village with the title of *baron*. But Theodoric, who piqued himself upon governing after the Roman manner, and observing the Roman laws and institutions, left every one in the full enjoyment of his ancient property. As to religion, though he himself, like most of his countrymen, professed the tenets of Arius, he allowed his subjects to profess the orthodox doctrine without molestation, giving liberty even to the Goths to renounce the doctrines in which they had been educated, and embrace the contrary opinions. In short, his many virtues, and the happiness of his subjects, are celebrated by all the historians of those times. The end of his reign, however, was sullied by

the death of the celebrated philosopher Boethius, and his father-in-law Symmachus. They were both beheaded in Pavia, on an unjust suspicion of treason; and scarce was the sentence put in execution when the king repented, and abandoned himself to the most pungent sorrow. The excess of his grief affected his understanding: for not long after, the head of a large fish being served up to supper, he fancied the head of the fish to be that of Symmachus threatening him in a ghastly manner. Hereupon, seized with horror and amazement, he was carried to his bed-chamber, where he died in a few days, on the 2d of September 526.

After the death of Theodoric, the kingdom devolved to Athalric his grandson; who being at that time only eight years of age, his mother Amalasuntha took upon her the regency. Her administration was equally upright with that of Theodoric himself; but the barbarians of whom her court was composed, finding fault with the encouragement she gave to learning, forced her to abandon the education of her son. The latter thereupon plunged into all manner of wickedness, and behaved to his mother with the greatest arrogance; and the faction finding themselves thus strengthened, at last commanded the queen to retire from court.

Amalasuntha, exerting her authority, seized three of the ringleaders of the sedition, whom she confined in the most remote parts of Italy. But these maintaining a secret correspondence with their friends and relations, never ceased to stir up the people against her; insomuch, that the queen, apprehending that the faction might in the end prevail, wrote to the emperor Justinian, begging leave to take refuge in his dominions. The emperor readily complied with her request, offering a noble palace at Durazzo for her habitation; but the queen having in the mean time caused the three ringleaders to be put to death, and no new disturbances arising thereupon, she did not accept of the emperor's offer. In 533, Athalric having contracted a lingering distemper by his riotous living and debaucheries, Amalasuntha, to avoid the calamities with which Italy was threatened in case of his death, formed a design of delivering it up to Justinian: but before her scheme was ripe for execution, Athalric died. Upon which the queen took for her colleague one Theodotus her cousin; obliging him, however, to swear that he would suffer her to enjoy and exercise her former power. This he very readily did, but soon forgot his promise; and when she took the liberty to remind him of it, caused her to be seized and confined in an island of the lake Bolsena in Tuscany. But as Theodotus had great reason to believe that this conduct would be resented by Justinian, he obliged her to write to him that no injury or injustice had been done her. Along with this letter he sent one written by himself, and filled with heavy complaints against Amalasuntha. The emperor, however, was so far from giving credit to what Theodotus urged against her, that he openly espoused her cause, wrote her a most affectionate letter, and assured her of his protection. But before this letter could reach her, the unhappy princess was strangled in the bath by the friends of those whom in the reign of her son she had deservedly put to death for raising disturbances in the state.

On the news of Amalasuntha's death, Justinian resolved

Italy.

9
Beheads
Boethius
Symmachus,
and dies of
grief.

10
Amalasun-
the regent;
governs
equitably.

11
Is treacher-
ously impris-
oned, and
put to
death;

Italy.
12
For which
reason Ju-
stinian
makes war
on the
Goths.

solved upon an immediate war with the Goths; and, to facilitate the enterprise, used his utmost endeavours to induce the Franks to assist him. To his solicitations he added a large sum of money; which last was very acceptable to his new allies. They promised to assist the emperor to the utmost of their power; but instead of performing their promise, while Justinian's arms were employed against the Goths, Thierry, the eldest son of Clovis, seized on several cities of Liguria, the Alpes Cottiae, and great part of the present territory of Venice, for himself. Justinian, however, found sufficient resources in the valour of Belisarius, notwithstanding the defection of his treacherous allies. This celebrated general was vested with the supreme command, and absolute authority. His instructions were to pretend a voyage to Carthage, but to make an attempt upon Sicily; and if he thought he could succeed in the attempt, to land there; otherwise to sail for Africa, without discovering his intentions. Another general, named *Mundus*, commander of the troops in Illyricum, was ordered to march into Dalmatia, which was subject to the Goths, and attempt the reduction of Salonæ, the better to open a passage into Italy. This he accomplished without difficulty, and Belisarius made himself master of Sicily sooner than he himself had expected. The island was reduced on the last of December 535; upon which Belisarius, without loss of time, passed over to Reggio, which opened its gates to him. From Reggio he pursued his march to Rome, the provinces of Abrutium, Lucania, Puglia, Calabria, and Samnium, readily submitting to him. The city of Naples endured a siege: but Belisarius entered in through an aqueduct, and gave it up to be plundered by his soldiers.

13
Theodo-
tus offers to
reigns the
kingdom.

Theodotus, alarmed at these successes, and having neither capacity nor inclination to carry on the war, sent ambassadors to Justinian with proposals of peace. He agreed to renounce all pretensions to the island of Sicily; to send the emperor yearly a crown of gold weighing 300 pounds; and to supply him with 3000 men whenever he should think proper to demand them. Several other articles were contained in the proposal, which amounted to the owning of Justinian for his lord, and that he held the crown of Italy only through his favour. As he apprehended, however, that these offers might not yet be satisfactory, he recalled his ambassadors for further orders. They were now desired to inform Justinian, that Theodotus was willing to resign the kingdom to him, and content himself with a pension suitable to his quality. But he obliged them by an oath not to mention this proposal, till they found that the emperor would not accept of the other. The first proposals were accordingly rejected as they had supposed; upon which the ambassadors produced the second, signed by Theodotus himself, who in his letter to the emperor told him, among other things, that being unacquainted with war, and addicted to the study of philosophy, he preferred his quiet to a kingdom. Justinian, transported with joy, and imagining the war already finished, answered the king in a most obliging manner, extolling his wisdom, and giving him besides what he demanded the greatest honours of the empire. The agreement being confirmed by mutual oaths, lands were assigned to Theodotus out of the king's domain, and orders were dis-

Nº 170.

patched to Belisarius to take possession of Italy in his name.

Italy.

In the mean time, a body of Goths having entered Dalmatia, with a design to recover the city of Salonæ, were encountered by an inferior army of Romans, commanded by the son of Mundus above mentioned. The Goths proved victorious; and the young general of the Romans was killed, and most of his army cut in pieces. Mundus marched against the enemy to revenge the death of his son; but met with no better success, his troops being defeated, and he himself killed in the engagement. Upon this the Romans abandoned Salonæ and all Dalmatia; and Theodotus, elated with his success, refused to fulfil the articles of the treaty. Justinian dispatched Constantianus, an officer of great valour and experience, into Illyricum, with orders to raise forces there, and to enter Dalmatia; at the same time he wrote to Belisarius to pursue the war with the utmost vigour.

14
Theodotus
refuses to
fulfil the
articles of
the treaty.

The Goths were now reduced to the greatest straits. Constantianus drove them out of Dalmatia; and Belisarius having reduced all the provinces which compose the present kingdom of Naples, advanced towards Rome. The chief men of the nation, finding their king incapable of preventing the impending ruin, assembled without his consent, and dispatched ambassadors to Belisarius with proposals of peace. These proposals were rejected; and Belisarius returned for answer, that he would hearken to no terms, nor sheath his sword, till Italy was reannexed to the empire to which it belonged. The Goths finding Theodotus still inactive, unanimously deposed him; and chose in his stead one Vitiges, a man of great valour, but of a mean descent. Theodotus fled to Ravenna; but the new king dispatched after him a messenger, who soon overtook him and cut off his head.

15
He is de-
posed, and
chose in
his stead.

Vitiges began his government by writing a circular letter, in which he exhorted his countrymen to exert their ancient courage, and fight bravely for their lives and liberties. He then marched with what forces he could collect towards Rome; but not thinking himself able to defend that city against the Roman forces, he abandoned it to Belisarius, and arriving at Ravenna was joined by the Goths from all parts, so that he soon found himself at the head of a considerable army. Belisarius in the mean time entered Rome without opposition, on the 9th or 10th of December 537. The Gothic garrison retired by the Porta Flaminia, while Belisarius entered by the Porta Asinaria. Leudaris, governor of the city, who staid behind, was sent, together with the keys, to the emperor. Belisarius immediately applied himself to the repairing of the walls and other fortifications; filled the granaries with corn, which he caused to be brought from Sicily; and stored the place with provisions, as if he had been preparing for a siege; which gave no small uneasiness to the inhabitants, who chose rather that their city should lie open to every invader, than that they should be liable to the calamities of a siege. While Belisarius was thus employed at Rome, the city of Benevento, with great part of the territory of Samnium, was delivered up to him: at the same time the cities of Narnia, Spoleto, and Perugia, revolting from the Goths, received Roman garrisons; as did most of the cities of Tuscany.

In

Italy.
16
He collects
a great
army.

In the mean time, Vitiges having collected an army of 150,000 men, resolved to march directly to Rome, and engage Belisarius; or, if he declined an engagement, to lay siege to the city. But apprehending that the Franks, who were in confederacy with the emperor, might fall upon him at the same time, he sent ambassadors to them, with offers of all the Gothic possessions in Gaul, besides a considerable sum of money, provided they joined him against the emperor. The Franks with their usual treachery consented to the proposal, received the money and the territories agreed on, and then refused to fulfil the terms of the treaty. Vitiges, however, began his march to Rome, leaving behind him all the fortified towns on the road, the reduction of which he knew would cost him too much trouble. Belisarius, whose army, reduced by the many towns he had garrisoned, did not now amount to above 5000 men, dispatched messengers to Constantianus in Lusitany; and to Bessas, by nation a Goth, but of the emperor's party, in Umbria, with orders to join him with all possible expedition; writing at the same time to the emperor himself for supplies in the most pressing manner. Constantianus joined him pursuant to his orders; and soon after, Bessas, falling in with part of the enemy's vanguard, killed a considerable number of them, and put the rest to flight. Belisarius had built a fort upon a bridge about a mile from Rome, and placed a strong garrison in it to dispute the passage with the enemy; but the garrison, seized with a panic at the approach of the Goths, abandoned their post in the night, and fled into Campania. Early in the morning Vitiges passed over great part of his army, and marched on till he was met by Belisarius, who, knowing nothing of what had happened, came with 1000 horse to view the ground about the bridge. He was greatly surprised when he beheld the enemy marching up against him: however, lest he should heighten their courage by his flight or retreat, he stood his ground, and received the enemy at the head of his small body, exposing himself, without his usual prudence and discretion, to the greatest dangers. Being known by some fugitives, and discovered to the enemy, they all aimed at him alone, which made his own men the more solicitous to defend him; so that the whole contest was for some time about his person. At last the Goths were driven back to their camp, which the Romans with great temerity attempted to force. In this attempt, however, they met with such a vigorous resistance, that they soon abandoned the enterprise, and retired with precipitation to a neighbouring eminence; whence they were forced down by the enemy, put to flight, and pursued to the very gates of the city. Here they were in greater danger than ever; for those within, fearing that the enemy might in that confusion enter with them, refused to admit them. The general himself cried out earnestly to them, telling who he was, and commanding them to open the gates; but as they had been informed by those who first fled, that he was slain, and they could not distinguish him on account of the blood and dust with which his face was covered, they gave no ear to what he said. In this extremity, having encouraged his men, who were now driven into a narrow compass, to make a last effort, he put himself at their head, and

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attacked the enemy with such fury, that the Goths, imagining fresh troops were falling out upon them, began to give ground, and at last retired to their camp. The Roman general did not pursue them; but entered the city, where he was received with loud acclamations.

18
A few days after, the city was closely invested by Rome besieged by the Goths, Vitiges; who, to distress the inhabitants, pulled down the aqueducts by which water was conveyed into the city, and which had been built at an immense charge by the Roman emperors. Belisarius on his part omitted nothing for his defence; inasmuch that the cowardly citizens assembled in a tumultuous manner, and railed at the general on account of his supposed temerity. Vitiges, to encourage this mutinous disposition, dispatched ambassadors to the senate with proposals of peace. These ambassadors, however, were dismissed without any answer, and the siege was begun with great vigour. Belisarius made a gallant defence; and in seven months is said to have destroyed 40,000 of the Goths. About this time he received a supply of 1600 archers from the emperor; and these, in several successful sallies, are said to have killed 4000 more of the enemy.

The Romans, elated with their successes, now became impatient for an engagement; and at last, notwithstanding all the remonstrances of their general, forced him to lead them out against the enemy. The success was answerable to the rash attempt. The Romans were defeated, with the loss of some of their bravest officers, and a great many of their common soldiers; after which they contented themselves with falling out in small parties, which they commonly did with the greatest success.

But though the Romans had the satisfaction of thus cutting off their enemies, they were most grievously afflicted with a famine and plague; inasmuch that the inhabitants, no longer able to bear their calamities, were on the point of forcing Belisarius to venture a second battle, when a seasonable supply of troops, viz. 3000 Isaurians, 800 Thracian horse, and 1300 horse of other nations, together with 500 Italians who joined them by the way, arrived at Rome. Belisarius immediately sallied out by the Flaminian gate, and fell upon the Goths in order to give his allies time to enter by the opposite side of the city, which they did without the loss of a man.—The Goths hearing of the arrival of these troops, and their numbers being magnified as is usual in such cases, began to despair of becoming masters of the city; especially as the famine and plague raged with great violence in their camp, and their army was much reduced. Ambassadors were therefore dispatched to Belisarius with proposals of peace; but the only thing they could obtain was a cessation of arms for three months, during which time they might send ambassadors to the emperor. The negotiations with the emperor, however, proved unsuccessful; and the siege was pursued with great vigour till Vitiges received the news of the taking of Rimini by the Romans. As this city was but a day's journey from Ravenna, the Goths were so much alarmed, that they immediately raised the siege of Rome, after it had continued a year and nine days. Belisarius fell upon their rear as they passed the bridge of the Tiber, and

3 A

cut

17
Obstinate
engagement
between the
Goths and
Romans.

Italy.
19
The siege
raised.

cut great numbers of them in pieces, while others, struck with a panic, threw themselves into the river and were drowned.

The first enterprise of Vitiges, after raising the siege of Rome, was an attempt upon Rimini: but while he was employed in this siege, the Romans made themselves masters of Milan; upon which a Gothic general, named *Uraia*, was immediately dispatched with a powerful army to retake it. In the mean time, however, a supply of 7000 Romans arrived from the emperor, under the command of *Narſes*, a celebrated general. The immediate consequence of this was the raising of the siege of Rimini; for Vitiges perceiving the two Roman armies coming against him, and concluding, from the many fires they made, that they were much more numerous than they really were, fled in such haste, that the greatest part of the baggage was left behind. The confusion of the Goths was so great, that, had not the garrison been extremely feeble, they might have easily cut them off in their retreat, and thus put an end to the war at once. The success of the Romans; however, was now retarded by some misunderstandingings between the two generals: so that, though Belisarius made himself master of Urbinum and *Urbiventum*, while *Narſes* reduced some other places, yet the important city of Milan was suffered to fall into the hands of the Goths, who massacred all the inhabitants that were able to bear arms, to the number of 300,000, and sold the women for slaves. The city was also totally demolished; and this disaster made such an impression on the mind of Justinian, that he immediately recalled *Narſes*, and gave the command of his troops to Belisarius.

20
Milan taken by the Goths.

Vitiges, who had promised himself great advantages from the disagreement of the two generals, was much disappointed by the recall of *Narſes*; and therefore dreading the power of Belisarius when at the head of a formidable army, thought of engaging in alliance with some foreign prince. In his choice, however, he was somewhat at a loss. He knew the treachery of the Franks, and therefore did not apply to them. He applied to the Lombards; but, though tempted by the offer of a large sum of money, they continued inviolably attached to the Roman interest. At last he found means to persuade *Chosroes* king of Persia to make war upon Justinian, which he thought would infallibly procure the recall of Belisarius. But the Roman general, understanding his design, pushed on the war in the most vigorous manner; while, in the mean time, the treacherous Franks, thinking both nations sufficiently weakened by their mutual hostilities, resolved to attack both, and seize upon the country for which they contended. Accordingly, Theodebert, unmindful of the oaths he had taken both to the Goths and Romans, passed the Alps at the head of 150,000, or, as some will have it, 200,000 men, and entered Liguria. As no hostilities were committed by them on their march, the Goths concluded that they were come to their assistance; and therefore took care to supply them with provisions. Thus they crossed the Po without opposition; and having secured the bridge, marched towards the place where a body of Goths were encamped; who, looking upon them as friends, admitted them without hesitation. But they were soon convinced of their mistake; for the Franks

21
Italy invaded by the Franks.

falling unexpectedly upon them, drove them out of the camp with great slaughter, and seized on their baggage and provisions. A body of Romans that lay at a small distance from the Goths concluding that they had been defeated by Belisarius, advanced with great joy to meet him as they imagined; but the Franks falling unawares upon them, treated them as they had done the Goths, and made themselves masters of their camp. Thus they acquired a very considerable booty and store of provisions; but the latter being soon consumed, and the country round about quite exhausted, vast numbers of the Franks perished; so that Theodebert at last found himself obliged to return. In his way he destroyed Genoa and several other places, and arrived in his own dominions loaded with booty.

Italy.

In the mean time, Belisarius was making great progress. He took the cities of Auximum and *Fesulæ* after an obstinate siege; the inhabitants of the former having for some time fed on grass before they would surrender. After this he invested Ravenna, the capital of all the Gothic dominions in Italy. The place was defended by a very numerous garrison, commanded by the king in person, who exerted all his bravery in the defence of his metropolis. As the siege, however, was pushed on with great vigour, it was evident that the city must at last submit; and the great successes of the Romans began to give jealousy to the neighbouring potentates. Theodebert king of the Franks offered to assist Vitiges with an army of 500,000 men; but Belisarius, being informed of this negotiation, sent ambassadors to Vitiges, putting him in mind of the treachery of the Franks, and assured him that the emperor was ready to grant him very honourable terms. The king, by the advice of his counsellors, rejected the alliance of the Franks, and sent ambassadors to Constantinople; but in the mean time, Belisarius, in order to bring the citizens to his own terms, bribed one of them to set fire to a magazine of corn, by which means the city was soon straitened for want of provisions. But, notwithstanding this disaster, they still continued to hold out, till the arrival of the ambassadors from Constantinople, who brought very favourable terms. These were, That the country beyond the Po, with respect to Rome, should remain to the Goths; but that the rest of Italy should be yielded to the emperor, and the royal treasure of the Goths should be equally divided between him and the king. To these conditions, however, Belisarius positively refused to assent; being desirous of leading captive the king of the Goths, as he had formerly done the king of the Vandals, to Constantinople. He therefore pursued the siege with more vigour than ever, without hearkening to the complaints of his soldiers and officers, who were quite tired out with the length of the siege: he only obliged such of the officers as were of opinion that the town could not be taken, to express their opinion in writing, that they might not deny it afterwards.

The Goths were as weary of the siege as the Romans; but fearing lest Justinian should transplant them to Thrace, formed a resolution, without the consent of their king, of surrendering to Belisarius himself, and declaring him emperor of the west. To this they were the more encouraged by the refusal of Belisarius to agree to the terms proposed by the emperor;

whence

Italy. whence they concluded that he designed to revolt, and make himself emperor of Italy. Of this, however, Belisarius had no design; but thought proper to accept of the title, in order to accelerate the surrender of the city, after acquainting his principal officers with what had passed. Vitiges at last discovered the plot; but finding himself in no condition to oppose it, he commended the resolution of his people, and even wrote to Belisarius, encouraging him to take upon him the title of *king*, and assuring him of his assistance. Hereupon Belisarius pressed the Goths to surrender; which, however, they still refused, till he had taken an oath that he would treat them with humanity, and maintain them in the possession of all their rights and privileges. Upon this he was admitted into the city, where he behaved with great moderation towards the Goths; but seized on the royal treasure, and secured the person of the king. The Roman army, when it entered Ravenna, appeared so very inconsiderable, that the Gothic women on beholding it could not forbear spitting in the faces of their husbands, and reviling them as cowards.

23
Ravenna
reduced
and Vitiges
taken pri-
soner.

The captivity of Vitiges, and the taking of Ravenna, did not put an end to the war. Belisarius was soon after recalled to take the command of the army in the east. The Goths were greatly surprised that he should leave his new kingdom out of regard to the orders of the emperor; but, after his departure, chose one Ildebald, a man of great experience in affairs both civil and military, for their king. He revived the drooping spirits of his countrymen, defeated the Romans, and reduced all the province of Venetia; but was in a short time murdered, and Eraric, a Rugian, succeeded to the throne. He was scarce invested with the sovereignty, when his subjects began to think of deposing him, and raising Totila to the throne; which the latter accepted, upon condition that they previously dispatched Eraric. This was accordingly done; after which Totila was proclaimed king of Italy in the year 542.

24
Success of
Totila against
the Romans.

The new king proved a very formidable enemy to the Romans, who now lost ground every-where. They made an attempt on the city of Verona; in which they miscarried through their own avarice, having disputed about the division of the plunder till the opportunity of taking the town was past. They were next defeated in two bloody engagements; the consequence of which was, that the Goths made themselves masters of all the strong places in Tuscany. From thence marching into Campania and Samnium, they reduced the strong town of Beneventum, and laid siege to Naples. During the siege of this last place, several detachments were sent from the king's army, which took Cumæ, and recovered all Brutia, Lucania, Apulia, and Calabria, where they found considerable sums which had been gathered for the emperor's use. The Romans, in the mean time, disheartened by their losses, and deprived of those sums which should have paid their wages, refused to take the field. A considerable fleet was therefore sent by Justinian to the relief of Naples: but Totila, having timely notice of this design, manned, with incredible expedition, a great number of light vessels; which, falling unexpectedly on the Roman fleet, took or sunk every ship,

and made prisoners of all on board, excepting a few who escaped in their boats. A similar fate attended another fleet dispatched from Sicily for the same purpose. They put to sea in the depth of winter; and, meeting with a violent storm, were driven ashore near the enemy's camp; who sunk the ships, and made what slaughter they pleased of the seamen and soldiers. Upon this second disaster, the Neapolitans, despairing of further relief, submitted to Totila; who granted them honourable terms, and treated them with great humanity. As they had been long pinched with famine, Totila, apprehending they might endanger their lives by indulging their appetites too much at first, placed guards at the gates to prevent their going out, taking care at the same time to supply them sparingly with provisions, but increasing their allowance every day. Being thus by degrees restored to their former strength, he ordered the gates to be set open, and gave every one full liberty to stay in the city or remove as he thought fit. The garrison he treated with extraordinary kindness. They were first supplied with ships to carry them to Constantinople; but the king having discovered that their real design was to sail to Rome, in order to reinforce the garrison of that city (which they knew he was soon to besiege), he was so far from punishing them as they expected, that he furnished them with horses, waggons, and provisions, and ordered a body of Goths to escort them to Rome by land, as the winds had proved unfavourable for their passage by sea.

Totila having thus become master of Naples and most of the other fortresses in these parts, began to think of reducing Rome also. He first attempted to persuade the citizens to a surrender: but finding his persuasions ineffectual, he sent a detachment of his army into Calabria to reduce Otranto, which had not yet submitted; after which, he marched with the rest of his forces against the towns in the neighbourhood of Rome. The city of Tibur, now Tivoli, about 18 miles from Rome, was betrayed to him; and all the inhabitants, together with their bishop, were put to the sword. Several other strong-holds in the neighbourhood of that city he took by storm; so that Rome was in a manner blocked up by land, all communication with the neighbouring country being cut off.

Justinian, in the mean time, being greatly perplexed by the bad news he every day received from Italy, recalled Belisarius from Persia, notwithstanding the success which attended him there. To save Rome, however, was now impossible even for Belisarius himself. As soon as he arrived in Italy, finding himself unable either to relieve the towns which were besieged, or to stop the progress of the Goths, he dispatched letters to Justinian, informing him, that being destitute of men, arms, and money, it was impossible for him to prosecute the war; upon which the emperor ordered new levies to be made, all the veterans being engaged in the Persian war. In the mean time, however, Totila pursued his good fortune; took the cities of Firmum, Asculum, Auximum, Spoleto, &c. and at length advanced to Rome, which he invested on all sides. As he drew near the city, two officers, whom Belisarius had sent into the city, ventured to make a sally, though contrary to the express orders of their

Italy.

25
Rome be-
sieged,

Italy.

Italy.

general, thinking they should surprise the Goths; but they were themselves taken in an ambuscade, and, most of their men being cut in pieces, narrowly escaped falling into the hands of the enemy. Belisarius made several attempts to relieve the city: but all of them, however well concerted, by some accident or other proved unsuccessful; which gave him so much uneasiness, that he fell into a feverish disorder, and was for some time thought to be in danger of his life. The city was soon reduced to great straits; a dreadful famine ensued; and the unhappy citizens having consumed every thing that could be supposed to give them nourishment, even the grass that grew near the walls, were obliged, it is said, to feed on their own excrements. Many put an end to their lives, in order to free themselves from the intolerable calamities they suffered. The rest addressed their governor Bessas in the most pathetic manner, intreating him to supply them with food; or if that was not in his power, either to give them leave to go out of the town, or to terminate their miseries by putting them to death. Bessas replied, that to supply them with food was impossible; to let them go, unsafe; and to kill them, impious. In the end, however, he suffered those who were willing to retire, to leave the city, upon paying him a sum of money; but most of them either died on the road, or were cut in pieces by the enemy. At last, the besieged, unable to bear their miseries any longer, began to mutiny, and to press their governor to come to an agreement with Totila. This, however, he still refused; upon which, four of the Isaurians who guarded one of the gates, went privately to the camp of Totila, and offered to admit him into the city. The king received this proposal with great joy; and sending four Goths of great strength and intrepidity into the town along with them, he silently approached the gates in the night-time with his whole army. The gates were opened by the Isaurians, as they had promised; and upon the first alarm, Bessas with most of the soldiers and officers fled out of the town. The inhabitants took sanctuary in the churches; and only 60 of them and 26 soldiers were killed after the town was taken. Totila, however, gave his soldiers full liberty to plunder the city: which they did for several days together, stripping the inhabitants of all their wealth, and leaving nothing in their houses but naked walls; by which means many persons of distinction were reduced to beg their bread from door to door. In the house of Bessas was found an immense treasure, which he had scandalously amassed during the siege, by selling to the people, at an exorbitant price, the corn which had been stored up for the use of the garrison.

Totila, thus become master of Italy, sent ambassadors to Justinian with very respectful letters, desiring to live on the same terms with him that Theodoric had done with his predecessor Anastasius; promising in that case to respect him as his father, and to assist him, when he pleased, with all his force, against any other nation whatever. On the contrary, if the emperor rejected his offers, he threatened to level Rome with the ground, to put the whole senate to the sword, and to carry the war into Illyricum. The emperor returned no other answer, than that he referred the whole to Belisarius, who had full power to manage all things of that nature. Upon this Totila resolved to destroy the city;

and had actually thrown down a third part of the wall, when he received a letter from Belisarius, dissuading him from his intention. After having seriously considered this letter, Totila thought proper to alter his resolution with regard to the destruction of the city; but sent every one of the inhabitants into Lucania, without leaving a single person in the metropolis. Belisarius hearing of this, immediately returned to the capital, and undertook to repeople and repair it. He cleared the ditch which had been filled by Totila, but was for the present obliged to fill up the breaches in the walls with stones loosely heaped upon one another, and in this situation the city was again attacked by the Goths. Belisarius, however, had taken care to supply the inhabitants with plenty of provisions, so that they were now in no danger of suffering by famine; and the assaults of the enemy were vigorously repelled, notwithstanding the bad situation of the fortifications, so that Totila at last abandoned the enterprise.

In the mean time the Persians gained great advantages over the Romans in the East, so that there was a necessity for recalling Belisarius a second time. He was no sooner gone, than Totila renewed his efforts with greater vigour than ever; and at the same time the Franks, concluding that both Romans and Goths would be much weakened by such a destructive war, seized upon Venetia, which belonged to both nations, and made it a province of the French empire. Totila did not oppose them; but having obtained a reinforcement of 6000 Lombards, returned immediately before Rome, fully intent on making himself master of that metropolis. Having closely invested it by sea and land, he hoped in a short time to reduce it by famine; but against this the governor wisely provided, by causing corn to be sown within the walls; so that he could probably have defied the power of Totila, had not the city been again betrayed by the Isaurians, who opened one of the gates and admitted the enemy.

Thus the empire of the Goths was a third time established in Italy; and Totila, immediately on his becoming master of Rome, dispatched ambassadors to Justinian, offering to assist him as a faithful ally against any nation whatever, provided he would allow him the quiet possession of Italy. But Justinian was so far from hearkening to this proposal, that he would not even admit the ambassadors into his presence; upon which Totila resolved to pursue the war with the utmost vigour, and to make himself master not only of those places which the Romans possessed in Italy, but in Sicily also. This he fully accomplished; when Narfes, who had formerly been joined in the command with Belisarius, was appointed general, with absolute and uncontrolled authority. But while this general was making the necessary preparations for his expedition, Totila, having equipped a fleet of 300 galleys, sent them to pillage the coasts of Greece, where they got an immense booty. They made a descent on the island of Corfu; and having laid it waste, they sailed to Epirus, where they surprised and plundered the cities of Nicopolis and Anchialus, taking many ships on the coast, among which were some laden with provisions for the army of Narfes. After these successes they laid siege to Arcona in Dalmatia. Being defeated, however, both by sea and land, Totila once more sent ambassadors to Constantinople, offering to yield Sicily.

26
had taken.

27
Belisarius
recalled.

28
Narfes sent
into Italy.

Italy.

Sicily and all Dalmatia, to pay an annual tribute for Italy, and to assist the Romans as a faithful ally in all their wars; but Justinian, bent upon driving the Goths out of Italy, would not even suffer the ambassadors to appear in his presence.

Totila finding that no terms could be obtained, began to levy new forces, and to make great preparations by sea and land. He soon reduced the islands of Corsica and Sardinia; but this was the last of his successes. Narfes arrived in Italy with a very formidable army, and an immense treasure to pay the troops their arrears, the want of which had been one great cause of the bad success of Belisarius in his last expedition. He immediately took the road to Rome; while Totila assembled all his forces, in order to decide the fate of Italy by a general engagement. The battle proved very obstinate; but at last the Gothic cavalry being put to the rout, and retiring in great confusion among the infantry, the latter were thereby thrown into such disorder, that they could never afterwards rally. Narfes, observing their confusion, encouraged his men to make a last effort; which the Goths not being able to withstand, betook themselves to flight, with the loss of 6000 men killed on the spot. Totila finding the day irrecoverably lost, fled with only five horsemen for his attendants; but was pursued and mortally wounded by a commander of one of the bodies of barbarians who followed Narfes. He continued his flight, however, for some time longer; but was at last obliged to halt in order to get his wound dressed, soon after which he expired.

This disaster did not yet entirely break the spirit of the Goths. They chose for their king one Teia, deservedly esteemed one of the most valiant men of their nation, and who had on several occasions distinguished himself in a most eminent manner. All the valour and experience of Teia, however, were now insufficient to stop the progress of the Romans. Narfes made himself master of a great number of cities, and of Rome itself, before the Goths could assemble their forces. The Roman general next proceeded to invest Cumæ; which Teia determined at all events to relieve, as the royal treasure was lodged in that city. This brought on an engagement, which, if Procopius is to be credited, proved one of the most bloody that ever was fought. The Roman army consisted of vast multitudes brought from different nations: the Goths were few in comparison; but, animated by despair, and knowing that all was at stake, they fought with the utmost fury. Their king placed himself in the first rank, to encourage his men by his example; and is said to have given such proofs of his valour and conduct as equalled him to the most renowned heroes of antiquity. The Romans discovering him, and knowing that his death would probably put an end to the battle, if not to the war itself, directed their whole force against him, some attacking him with spears, and others discharging against him showers of darts and arrows. Teia maintained his ground with great intrepidity, received the missile weapons on his shield, and killed a great number of the enemy with his own hand. When his shield was so loaded with darts that he could not easily wield it, he called for another. Thus he shifted his shield three times; but as he attempted to change it another time, his breast being

necessarily exposed for a moment, a dart struck him in that moment with such force, that he immediately fell down dead in the place where he had stood from the beginning of the battle, and upon heaps of the enemy whom he had killed. The Romans, seeing him fall, cut off his head and exposed it to the sight of the Goths, not doubting but they would be immediately disheartened and retire. In this, however, they were disappointed. The Goths maintained the fight with great vigour, till night put an end to the engagement. The next day the engagement was renewed early in the morning, and continued till night; but on the third day, the Goths despairing of being able to overcome an enemy so much superior to them in numbers, sent deputies to Narfes, offering to lay down their arms, provided such of them as chose to remain in Italy were allowed to enjoy their estates and possessions without molestation, as subjects of the empire; and those who were willing to retire elsewhere, were suffered to carry with them all their goods and effects. To these terms Narfes readily assented; and thus the empire of the Goths in Italy was finally destroyed, the country now becoming a province of the eastern Roman empire.

In this conquest Narfes had been assisted, as already observed, by many barbarous nations, among whom were the Lombards, at that time settled in Pannonia. On the conclusion of the war, they were dismissed with rich presents, and the nation for some time continued faithful allies to the Romans. In the mean time Justinian dying, Narfes, who governed Italy with an absolute sway, was accused to the emperor Justin II. and to the empress Sophia, of aspiring to the sovereignty of the country. Hereupon he was recalled, and Longinus sent to succeed him. As Narfes was an eunuch, the empress is reported to have said, that his employment at Constantinople should be to distribute in the apartment of her women the portion of wool which each was to spin. Narfes, enraged at this sarcasm, replied, that he should begin such a web as he should never be able to finish; and immediately dispatched messengers to Alboinus king of the Lombards, inviting them into Italy. Along with the messengers he sent some of the best fruits the country afforded, in order to tempt him the more to become master of such a rich kingdom.

Alboinus, highly pleased with the opportunity of invading a country with which his subjects were already well acquainted, began without loss of time to make the necessary preparations for his journey. In the month of April 568, he set out with his whole nation, men, women, and children; carrying with them all their moveables. This promiscuous multitude arrived by the way of Istria; and advancing through the province of Venetia, found the whole country abandoned, the inhabitants having fled to the neighbouring islands in the Adriatic. The gates of Aquileia were opened by the few inhabitants who had courage to stay: most of them, however, had fled with all their valuable effects; and among the rest the patriarch Paulinus, who had carried with him all the sacred utensils of the churches. From Aquileia, Alboinus proceeded to Forum Julii, of which he likewise became master without opposition. Here he spent the winter; during which time he erected Friuli into a dukedom, which

Italy.

29
Who de-
feats and
kills Totila.

31
The end of
the empire
of the
Goths in
Italy.

30
And Teia.

32
Narfes in-
vites the
Lombards.

has

Italy.

has continued ever since. In 569, he made himself master of Trivigi, Oderzo, Monte Selce, Vicenza, Verona, and Trent; in each of which cities he left a strong garrison of Lombards under the command of an officer, whom he distinguished by the title of *duke*: but these dukes were only officers and governors of cities, who bore the title no longer than the prince thought proper to continue them in their command or government. Padua and some other cities Alboinus left behind him without attempting to reduce them, either because they were too well garrisoned, or because they lay too much out of his way. In 570, he entered Liguria. The inhabitants were so terrified at his approach, that they left their habitations with such of their effects as they could carry off, and fled into the most mountainous and inaccessible parts of the country. The cities of Brescia, Bergamo, Lodi, Como, and others quite to the Alps, being left almost without inhabitants, submitted of course; after which he reduced Milan, and was thereupon proclaimed king of Italy.

33
Who reduce the greatest part of Italy.

But though the Lombards had thus conferred the title of king of Italy on their sovereign, he was by no means possessed of the whole country, nor indeed was it ever in the power of the Lombards to get possession of the whole. Alboinus having made himself master of Venetia, Liguria, Æmilia, Etruria, and Umbria, applied himself to legislation and the civilisation of his subjects. But before he could make any progress in this work, he was taken off by the treachery of his wife; and Clephis, one of the nobles, chosen king in his stead. Clephis rebuilt some cities which had been ruined during the wars between the Goths and Romans, and extended his conquests to the very gates of Rome; but as he behaved both to the Romans and Lombards with the greatest cruelty, he was murdered, after a short reign of 18 months. His cruelty gave the Lombards such an aversion against regal power, that they changed their form of government, being governed only by their dukes for the space of ten years. During this interregnum, they proved successful in their wars with the Romans, and made themselves masters of several cities: but perceiving that their kingdom, thus divided, could not subsist, they resolved once more to submit to the authority of one man; and accordingly, in 585, Autharis was chosen king of the Lombards.

34
Subdued by Charles-magne.

The great object of ambition to the new race of Lombard monarchs was the conquest of all Italy; and this proved at last the ruin of their empire by Charles the Great, as related under the article FRANCE, n° 27. As the Lombards, however, had not been possessed of the whole territory of Italy, so the whole of it never came into the possession of Charlemagne: neither, since the time of the Goths, has the whole of this country been under the dominion of any single state. Some of the southern provinces were still possessed by the emperors of Constantinople; and the liberal grants of Pepin and Charlemagne himself to the pope, had invested him with a considerable share of temporal power. The territories of the pope indeed were supposed to be held in vassalage from France; but this the popes themselves always stiffly denied. The undisputed territory of Charlemagne in Italy, therefore, was restricted to Piedmont, the Milanese, the Mantuan, the territory

35
Extent of this Italian dominions.

of Genoa, Parma, Modena, Tuscany, Bologna, the dukedoms of Friuli, Spoleto, and Benevento; the last of which contained the greatest part of the present kingdom of Naples.

Italy.

The feudal government which the Lombards had introduced into Italy, naturally produced revolts and commotions, as the different dukes inclined either to change their masters or to set up for themselves. Several revolts indeed happened during the life of Charlemagne himself; which, however, he always found means to crush: but after his death, the sovereignty of Italy became an object of contention between the kings of France and the emperors of Germany. That great monarch had divided his extensive dominions among his children; but they all died during his lifetime, except Louis, whom he associated with himself in the empire, and who succeeded to all his dominions after his death. From this time we may date the troubles with which Italy was so long overwhelmed; and of which, as they proceeded from the ambition of those called kings of Italy and their nobles, of the kings of France, and of the emperors of Germany, it is difficult to have any clear idea. The following short sketch, however, may perhaps give some satisfaction on this perplexed subject.

At the time Louis the son of Charlemagne was declared emperor of the West, Italy was held by Bernard the son of Pepin, brother to Louis. Though this Bernard bore the title of *king*, yet he was only accounted a vassal of the emperor. His ambition, however, soon prompted him to rebel against his uncle; but being abandoned by his troops, he was taken prisoner, had his eyes pulled out, and died three days after. As the disturbances still continued, and the nobles of Lombardy were yet very refractory, Lothaire, eldest son to the emperor, was in the year 823 sent into Italy; of which country he was first crowned king at Rome, and afterwards emperor of the West, during his father's lifetime. But though his abilities were sufficient to have settled every thing in a state of tranquillity, his unbounded ambition prompted him to engage in rebellion against his father; whom he more than once took prisoner; though in the end he was obliged to submit, and ask pardon for his offences, which was obtained only on condition of his not passing the Alps without leave obtained from his father.

36
History of the disturbances in Italy after the time of Charlemagne.

In the mean time, the Saracens, taking advantage of these intestine wars, landed on the coasts of Italy, and committed such ravages, that even the bishops were obliged to arm themselves for the defence of the country. Lothaire, however, after returning from his unnatural war with his father, was so far from attempting to put an end to these ravages, or to restore tranquillity, that he seized on some places belonging to the see of Rome, under pretence that they were part of his kingdom of Lombardy; nor would he forbear these encroachments till expressly commanded to do so by his father. After having embroiled himself, and almost lost all his dominions, in a war with his brothers after the death of Louis, and declared his son, also called Louis, king of Italy, this ambitious prince died, leaving to Louis the title of *emperor* as well as *king of Italy*, with which he had before invested him.

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The new emperor applied himself to the restoration of tranquillity in his dominions, and driving out the Saracens from those places which they had seized in Italy. This he fully accomplished, and obliged the infidels to retire into Africa; but in 875 he died without naming any successor. After his death, some of the Italian nobles, headed by the duke of Tuscany, represented to the pope, that as Louis had left no successor, the regal dignity, which had so long been usurped by foreigners, ought now to return to the Italians. The pope, however, finding that Charles the Bald, king of France, had such an ambition for the imperial crown, that he would stick at nothing to obtain it, resolved to gratify him, though at as high a price as possible. He accordingly crowned him emperor and king of Lombardy, on condition of his owning the independency of Rome, and that he himself only held the empire by the gift of the pope. This produced a conspiracy among the discontented nobles; and at the same time the Saracens renewing their incursions, threatened the ecclesiastical territories with the utmost danger. The pope solicited the emperor's assistance with the greatest earnestness; but the latter died before any thing effectual could be done: after which, being distressed by the Saracens on one hand, and the Lombard nobles on the other, the unhappy pontiff was forced to fly into France. Italy now fell into the utmost confusion and anarchy; during which time many of the nobles and states of Lombardy assumed an independence, which they have ever since retained.

In 879, the pope was reconducted to Italy with an army by Boson son-in-law to Louis II. of France: but though he inclined very much to have raised this prince to the dignity of king of Italy, he found his interest insufficient for that purpose, and matters remained in their former situation. The nobles, who had driven out the pope, were now indeed reconciled to him: but notwithstanding this reconciliation, the state of the country was worse than ever; the great men renouncing the authority of any superior, and every one claiming to be sovereign in his own territories. To add to the calamities which ensued through the ambition of these despots, the Saracens committed every where the most terrible ravages; till at last the Italian nobles, despising the kings of the Carlovingian race, who had weakened themselves by their mutual dissensions, began to think of throwing off even all nominal submission to a foreign yoke, and retaining the imperial dignity among themselves. Thus they hoped, that, by being more united among themselves, they might be more able to resist the common enemy. Accordingly in 885 they went to pope Adrian; and requesting him to join them in asserting the independency of Italy, they obtained of him the two following decrees, viz. That the popes, after their election, might be consecrated without waiting for the presence of the king or his ambassadors; and that, if Charles the Gros died without sons, the kingdom of Italy, with the title of emperor, should be conferred on some of the Italian nobles.

These decrees were productive of the worst consequences imaginable. The emperor complained of being deprived of his right; and the dissensions between the Italian nobles themselves became more fatal than ever. The two most powerful of these noblemen, Be-

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rengarius duke of Friuli, and Guido or Vido duke of Spoleto, entered into an agreement, that on the death of the emperor the former should seize on the kingdom of Italy, and the latter on the kingdom of France. Berengarius succeeded without opposition; but Vido was disappointed, the French having already chosen Eudes or Otho for their king. Upon this he returned to Italy, and turned his arms against Berengarius. Vido proved victorious in an engagement, and drove his rival into Germany; where he sought the assistance of Arnolphus, who had succeeded to the crown after the death of Charles. Having thus obtained the kingdom of Italy, Vido employed his time in reforming the abuses of the state, and confirming the grants formerly given to the pope, out of gratitude for his having sanctified his usurpation and declared him lawful king of Italy. This tranquillity, however, was of short duration. Arnolphus sent an army into Italy; the Saracens from Spain ravaged the northern parts of the country, and getting possession of a castle near the Alps, held it for many years after, to the great distress of the neighbouring parts, which were exposed to their continual incursions; and at the same time Benevento was besieged and taken by the forces of the eastern emperor, so that Vido found his empire very considerably circumscribed in its dimensions.

The new king, distressed by so many enemies, associated his son Lambert with him in the government, and bribed the Germans to return to their own country. In 893, however, they again invaded Italy; but were suddenly obliged to leave the country, after having put Berengarius in possession of Pavia. In the mean time, Vido died, and his son Lambert drove out Berengarius: but having joined a faction, headed by one Sergius, against pope Formosus, the latter offered the kingdom of Italy to Arnolphus; who thereupon entered the country with an army, besieged and took Rome, massacring the faction of Sergius with the most unrelenting cruelty.

Arnolphus thus master of Italy, and crowned emperor by the pope, began to form schemes of strengthening himself in his new acquisitions by putting out the eyes of Berengarius: but the latter having timely notice of this treachery, fled to Verona; and the Italians were so provoked at this and the other cruelties of Arnolphus, that they drove him out of the country. His departure occasioned the greatest confusion at Rome. Formosus died soon after; and the successors to the papal dignity, having now no army to fear, excited the greatest disturbances. The body of Formosus was dug up and thrown into the Tiber by one pope; after which that pope was strangled, and Formosus's body buried again in the Vatican, by order of another. At last the coronation of Arnolphus was declared void; the Sergian faction entirely demolished, and the above mentioned decrees of Adrian were annulled; it being now determined that the elected popes should not be consecrated but in presence of the emperor or his ambassadors.

During these confusions Lambert enjoyed the kingdom in quiet; but the nobles hating him on account of his arbitrary and tyrannical government, began again to think of Berengarius. In the mean time, however, another faction offered the crown to Louis king of Arles. This new competitor entered Italy, with

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with an army in 899; but was forced by Berengarius to renounce his claim upon oath, and to swear that he would never again enter Italy, even though he should be invited to be crowned emperor.—This oath, however, was soon forgot. Louis readily accepted of another invitation, and was crowned king of Italy at Pavia in 901. The following year he forced Berengarius to fly into Bavaria; but having unadvisedly disbanded his army, as thinking himself now securely seated on the throne, Berengarius, who watched every opportunity, surprised him at Verona, and put out his eyes.

Thus Berengarius at last became king of Italy without a rival; and held his kingdom for 20 years afterwards, without any opposition from his subjects, who at last became sensible of the mischiefs arising from civil discords. He was not yet, however, without troubles. The Hungarians invaded Italy with a formidable army, and advanced within a small distance of Pavia. Berengarius armed the whole force of his dominions; and came against them with such a multitude, that the Hungarians retired without venturing an engagement. A great many of their men were lost in passing a river; upon which they sent deputies to Berengarius, offering to restore all their booty, and never to come again into Italy, provided they were allowed a safe retreat. These conditions were imprudently denied; upon which the Hungarians attacked the army of Berengarius in despair, and defeated them with great slaughter. After this they over-ran the whole country, and plundered the towns of Treviso, Vicenza, and Padua, without resistance, the inhabitants flying every where into fortified places.

This devastation they continued for two years; nor could their departure be procured without paying them a large sum of money: which, however, proved of little avail; for the following year they returned and ravaged the territory of Friuli without controul. Scarcely were these invaders departed, when the Saracens, who had settled at the foot of the Alps, invaded Apulia and Calabria, and made an irruption as far as Acqui in the neighbourhood of Pavia; while the inhabitants, instead of opposing them, fled to some forts which had been erected in the time of the first irruption of the Hungarians. In 912, however, John, presbyter of Ravenna, having attained the papal dignity by means of Theodora wife of Alderbert count of Tuscany, applied himself to regulate the affairs of the church, and to repress the insults of the Saracens. While he was considering on the most proper methods of effecting this, one of the Saracens, who had received an injury from his countrymen, fled to Rome, and offered to deliver the Italians from their invasions, if the pope would but allow him a small body of men. His proposals being accepted, 60 young men were chosen, all well armed; who being conducted by the Saracen into by-paths, attacked the infidels as they were returning from their inroads, and several times defeated great parties of them. These losses affecting the Saracens, a general alliance was concluded amongst all their cities; and having fortified a town on the Garigliano, they abandoned the rest, and retired hither. Thus they became much more formidable than before; which alarming the pope, he consulted with Arnulphus prince of Bene-

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vento and Capua, sending at the same time ambassadors to Constantine the Greek emperor, inviting him to an alliance against the infidels. The Saracens, unable to withstand such a powerful combination, were besieged in their city: where being reduced to great straits, they at last set fire to it, and sallied out into the woods; but being pursued by the Italians, they were all cut off to a man.

In this expedition it is probable that Berengarius gave great assistance; for this very year, 915, he was crowned emperor by the pope. This gave displeasure to many of the ambitious nobles; conspiracies were repeatedly formed against him; in 922, Rodolphus king of Burgundy was crowned also king of Italy; and in 924, Berengarius was treacherously assassinated at Verona; of which disturbances the Hungarians taking the advantage, plundered the cities of Mantua, Brescia, and Bergamo. Marching afterwards to Pavia, they invested it closely on all sides; and about the middle of March 925, taking advantage of the wind, burnt by they set fire to the houses next the walls, and during the confusion broke open the gates, and getting possession of the city treated the inhabitants with the greatest barbarity. Having burnt the capital of the kingdom, they next proceeded to Placenza, where they plundered the suburbs; and then returned to Pannonia laden with booty.

The affairs of Italy now fell into the utmost confusion. A faction was formed against Rodolphus in favour of Hugh count of Arles. The latter prevailed, and was crowned king at Pavia in 927. The Italians, however, soon repented of their choice. The Romans first invited him to be their governor, and then drove him out with disgrace; at the same time choosing a consul, tribunes, &c. as if they had designed to assert their ancient liberty. One faction, in the mean time, offered the crown to Rodolphus; and the other to Arnold duke of Bavaria, while the Saracens took this opportunity to plunder the city of Genoa.

Hugh, in the mean time, was not inactive. Having collected an army, he marched directly against Arnold, and entirely defeated him. Rodolphus delivered him from all apprehensions on his part, by entering into an alliance with him, and giving his daughter Adelaide in marriage to Lotharius, Hugh's son. Being thus free from all danger from foreign enemies, he marched against the Romans; but with them he also came to an agreement, and even gave his daughter in marriage to Alberic, whom they had chosen consul. In the mean time the country was infested by the Hungarians and Saracens, and at the same time depopulated by a plague. Endless conspiracies were formed against Hugh himself; and at last, in 947, he was totally deprived of the regal power by Berengarius, grandson to the first king of that name; soon after which he retired into Burgundy, and became a monk.

Though Berengarius was thus possessed of the supreme power, he did not assume the title of king till after the death of Lotharius, which happened in 950; but in the mean time Italy was invaded by Henry duke of Bavaria, and the Hungarians. The former took and plundered the city of Aquileia, and ravaged the neighbouring country; after which he returned without molestation into Germany: the latter made a

furious

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37
Pavia plundered and
burnt by the Hungarians.

Italy.
38
Italy oppressed by the Hungarians and Berengarius.

furious irruption; and Berengarius being unable to oppose them, was at last obliged to purchase their departure by money. In raising the sum agreed upon, however, Berengarius is said to have been more oppressive than even the Hungarians themselves. Every individual, without distinction of age or sex, was obliged to pay so much for their head, not excepting even the poor. The churches were likewise robbed; by which means the king raised an immense sum of money, 10 bushels of which he gave to the Hungarians, but kept the much greater part to himself.

Berengarius, not yet satisfied, wanted to be put in possession of Pavia, which was held by Adelaide, the widow of Lotharius. In order to obtain his purpose, he proposed a marriage between her and his son Adelbert. This proposal was rejected; upon which Berengarius besieged and took the city. The queen was confined in a neighbouring castle, from whence she made her escape by a contrivance of her confessor. With him and one female attendant she concealed herself for some days in a wood; but being obliged to remove from thence for want of food, she applied for protection to Adelard bishop of Reggio. By him she was recommended to his uncle Atho, who had a strong castle in the neighbourhood of Canozo. Here she was quickly besieged by Berengarius; upon which messengers were dispatched to Otho king of Germany, acquainting him, that, by expelling Berengarius, and marrying Adelaide, he might easily obtain the kingdom of Italy. This proposal he readily accepted, and married Adelaide; but allowed Berengarius to retain the greatest part of his dominions, upon condition of his doing homage for them to the kings of Germany. He deprived him, however, of the dukedom of Friuli and marquisate of Verona, which he gave to Henry duke of Bavaria.

39
Otho crowned king of Italy and emperor of the west

Berengarius, thus freed from all apprehension, not only oppressed his subjects in a most tyrannical manner, but revolted against Otho himself. This at last procured his ruin: for, in 961, Otho returned with an army into Italy, where he was crowned king by the archbishop of Milan; and the year following was crowned emperor by the pope. On this occasion he received the imperial crown from his holiness, and kissed his feet with great humility: after which they both went to the altar of St Peter, and bound themselves by a solemn oath, the pope to be always faithful to the emperor, and to give no assistance to Berengarius or Adelbert his enemies; and Otho, to consult the welfare of the church, and to restore to it all its patrimony granted by former emperors. Otho, besides this, bestowed very rich presents on the church of St Peter. He ordained that the election of popes should be according to the canons; that the elected pope should not be consecrated till he had publicly promised, in presence of the emperor's commissaries, to observe every thing formerly specified with regard to the rights of the emperors; that these commissaries should constantly reside at Rome, and make a report every year how justice was administered by the judges; and in case of any complaints, the commissaries should lay them before the pope; but if he neglected to intimate them, the imperial commissaries might then do what they pleased.

Thus we see that Otho, however much he might

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allow the pope's supremacy in spiritual matters, plainly assumed the sovereignty in temporals to himself; and thus Italy was for upwards of 300 years accounted a part of the German empire. The popes, however, by no means relished this superiority of the emperor. The latter was hardly departed, when the pope (John XII.) broke the oath which he had just before sworn with so much solemnity; and entered first into an alliance with Adelbert count of Tuscany to expel the Germans, and then solicited the Hungarians to invade Italy. This treachery was soon punished by Otho. He returned with part of his army, and assembled a council of bishops. As the pope did not appear, Otho pretended great concern for his absence. The bishops replied, that the consciousness of his guilt made him afraid to show himself. The emperor then inquired particularly into his crimes; upon which the bishops accused him of filling the palace with lewd women, of ordaining a bishop in a stable, castrating a cardinal, drinking the devil's health, &c. As the pope still refused to appear in order to justify himself from these charges, he was formally deposed; and Leo the chief secretary, though a layman, elected in his stead.

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The new pope, in compliment to the emperor, granted a bull, by which it was ordained that Otho and his successors should have a right of appointing the popes and investing archbishops and bishops; and that none should dare to consecrate a bishop without leave obtained from the emperor. Thus were the affairs of the Italians still kept in the utmost confusion even during the reign of Otho I. who appears to have been a wise and active prince. He was no sooner gone, than the new pope was deposed, all his decrees annulled, and John replaced. The party of Leo was now treated with great cruelty: but John was soon stopped in his career; for about the middle of May, the same year (964) in which he had been restored, being surprised in bed with a Roman lady, he received a blow on the head from the devil (according to the authors of those times), of which he died eight days after. After his death a cardinal-deacon, named *Benedict*, was elected by the Romans, but deposed by Otho, and banished to Hamburg.

40
He deposes the pope.

The emperor was scarce returned to Germany, when his sickle Italians revolted, and sent for Adelbert, who had fled to Corsica. But being soon reduced, they continued quiet for about a year; after which they revolted again, and imprisoned the pope. Otho, however, provoked at their rebellious disposition, soon returned, and punished the rebels with great severity; after which he made several laws for the better regulation of the city of Rome, granted several privileges to the Venetians, and caused his son Otho, then only 13 years of age, to be crowned emperor.

41
The Italians revolt, but are reduced.

This ceremony being over, Otho dispatched an ambassador to Nicephorus, emperor of Constantinople, demanding his step-daughter Theophania in marriage for the young emperor; but upon this alliance being rejected, and that not without circumstances of the most atrocious perfidy, Otho instantly invaded the countries of Apulia and Calabria, and entirely defeated the Greek army in those parts. In the mean time, however, Nicephorus being killed, and his throne usurped by John Zimisces, Otho immediately entered

3 B

into

Italy.

into an alliance with the latter, and easily obtained Theophania for his son. She was crowned with great solemnity on the 8th of April 969: at the same time it is pretended by some authors, that the Greeks renounced their rights to Calabria and Apulia; though this is denied by others. After the celebration of this marriage, the emperor undertook an expedition against the Saracens, who still resided at the foot of the Alps; but being informed of the death of several nobles in Germany, he thought proper to return thither, where he died of an apoplexy in the year 973.

43
State of
Italy at the
death of
Otho.

At the time of Otho's death Italy was divided into the provinces of Apulia, Calabria, the dukedom of Benevento, Campania, Terra Romana, the dukedom of Spoletto, Tuscany, Romagna, Lombardy, and the marquises of Acona, Verona, Friuli, Treviso, and Genoa. Apulia and Calabria were still claimed by the Greeks; but all the rest were either immediately subject to, or held of, the kings of Italy. Otho conferred Benevento (including the ancient Samnium) on the duke of that name. Campania and Lucania he gave to the dukes of Capua, Naples, and Salerno. Rome with its territory, Ravenna with the exarchate, the dukedom of Spoletto, with Tuscany, and the marquise of Ancona, he granted to the pope; and retained the rest of Italy under the form of a kingdom. Some of the cities were left free, but all tributary. He appointed several hereditary marquises and counties, but reserved to himself the sovereign jurisdiction in their territories. The liberty of the cities consisted in a freedom to choose their own magistrates, to be judged by their own laws, and to dispose of their own revenues, on condition that they took the oath of allegiance to the king, and paid the customary tribute. The cities that were not free were governed by the commissaries or lieutenants of the emperor; but the free cities were governed by two or more consuls, afterwards called *poteslates*, chosen annually, who took the oath of allegiance to the emperor before the bishop of the city or the emperor's commissary. The tribute exacted was called *foderum, parata, et mansonaticum*. By the *foderum* was meant a certain quantity of corn which the cities were obliged to furnish to the king when marching with an army or making a progress through the country; though the value of this was frequently paid in money. By the *parata* was understood the expence laid out in keeping the public roads and bridges in repair; and the *mansonaticum* included those expences which were required for lodging the troops or accommodating them in their camp. Under pretence of this last article the inhabitants were sometimes stripped of all they possessed except their oxen and seed for the land. Besides regulating what regarded the cities, Otho distributed honours and possessions to those who had served him faithfully. The honours consisted in the titles of *duke, marquis, count, captain, valvasor, and valvasin*; the possessions were, besides land, the duties arising from harbours, ferries, roads, fish-ponds, mills, salt-pits, the uses of rivers, and all pertaining to them, and such like. The dukes, marquises, and counts, were those who received dukedoms, marquises, and counties, from the king in fiefs; the captains had the command of a certain number of men by a grant from the king, duke, marquis, or count; the valvasors

were subordinate to the captains, and the valvasins to them.

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No sooner was the death of Otho I. known in Italy, ⁴³ Great disturbances than, as if they had been now freed from all restraint, the nobles declared war against each other: some cities revolted, and chose to themselves consuls; while the dominions of others were seized by the nobles, who confirmed their power by erecting citadels. Rome especially was harassed by tumults, occasioned chiefly by the seditious practices of one Cincius, who pressed his fellow-citizens to restore the ancient republic. As the pope continued firm in the interests of the emperor, Cincius caused him to be strangled by one Franco a cardinal deacon; who was soon after rewarded with the pontificate, and took upon him the name of *Boniface VII.* Another Pope was chosen by the faction of the count of Tuscany; who being approved by the emperor, drove Cincius and Boniface out of the city. Disturbances of a similar kind took place in other cities, though Milan continued quiet and loyal in the midst of all this uproar and confusion.

In the mean time Boniface fled for refuge to Constantinople, where he excited the emperor to make war against Otho II. In 979 an army was accordingly sent into Italy, which conquered Apulia and Calabria; but the next year Otho entered Italy with a formidable army; and having taken a severe revenge on the authors of the disturbances, drove the Greeks entirely out of the provinces they had seized. Having then caused his son Otho III. at that time a boy of ten years of age, to be proclaimed emperor, he died at Rome in the year 983. Among the regulations made by this emperor, one is very remarkable, and must give us a strange idea of the inhabitants of Italy at that time. He made a law, That no Italian should be believed upon his oath; and that in any dispute which could not be decided otherwise than by witnesses, the parties should have recourse to a duel.

Otho III. succeeded to the empire at twelve years of age; and during his minority the disturbances in Italy revived. Cincius, called also *Crescentius*, renewed his scheme of restoring the republic. The pope (John XV.) opposing his schemes, was driven out of the city; but was soon after recalled, on hearing that he had applied to the emperor for assistance. A few years after Crescentius again revolted, and expelled Gregory V. the successor of John XV.; raising to the papal dignity a creature of his own, under the name of *John XVI.* Otho, enraged at this insult, returned to Rome with a powerful army in 998, besieged and took it by assault; after which he caused Crescentius to be beheaded, and the pope he had set up to be thrown headlong from the castle of St Angelo, after having his eyes pulled out, and his nose cut off. Four years after, he himself died of the small-pox; or, according to some, was poisoned by the widow of Crescentius, whom he had debauched under a promise of marriage, just as he was about to punish the Romans for another revolt.

Otho was succeeded in the imperial throne by Henry duke of Bavaria, and grandson to Otho II. Henry had no sooner settled the affairs of Germany, than he found it necessary to march into Italy against Ardouin marquis of Ivrea, who had assumed the title of *King*

44
Rome
taken by
Otho III.

of

Italy. of *Italy.* Him he defeated in an engagement, and was himself crowned king of Italy at Pavia in 1005; but a few years after, a new contest arose about the papal chair, which again required the presence of the emperor. Before he arrived, however, one of the competitors (*Benedict VIII.*) had got the better of his rival, and both Henry and his queen received the imperial crown from his hands. Before the emperor entered the church, the pope proposed to him the following question: "Will you observe your fidelity to me and my successors in every thing?" To which, though a kind of homage, he submitted, and answered in the affirmative. After his coronation, he confirmed the privileges bestowed on the Roman see by his predecessors, and added some others of his own; still, however, reserving for himself the sovereignty and the power of sending commissaries to hear the grievances of the people. Having repelled the incursions of the Saracens, reduced some more rebellions of his subjects, and reduced the greatest part of Apulia and Calabria, he died in the year 1024.

The death of this emperor was, as usual, followed by a competition for the crown. Conrad being chosen emperor of Germany, was declared king of Italy by the archbishop of Milan; while a party of the nobles made offer of the crown to Robert king of France, or his son Hugh. But this offer being declined, and likewise another to William duke of Guienne, Conrad enjoyed the dignity conferred on him by the archbishop without molestation. He was crowned king of Italy at Monza in 1026; and the next year he received the imperial crown from pope John XX. in presence of Canute the Great, king of England, Denmark, and Norway, and Rodolph III. king of Burgundy. His reign was similar to that of his predecessors. The Italians revolted, the pope was expelled, the malecontents were subdued, and the pope restored; after which the emperor returned to Germany, and died in 1039.

⁴⁵ The disorders increase under Henry III. Under Henry III. who succeeded Conrad, the disturbances were prodigiously augmented. Pope Sylvester II. was driven out by Benedict; who in his turn was expelled by John bishop of Sabinum, who assumed the title of *Sylvester III.* Three months after Benedict was restored, and excommunicated his rivals; but soon after resigned the pontificate for a sum of money. In a short time he reclaimed it; and thus there were at once three popes, each of whom was supported on a branch of the papal revenue, while all of them made themselves odious by the scandalous lives they led. At last a priest called *Gratian* put an end to this singular triumvirate. Partly by artifice, and partly by presents, he persuaded all the three to renounce their pretensions to the papacy; and the people of Rome, out of gratitude for so signal a service to the church, chose him pope, under the name of *Gregory VI.* Henry III. took umbrage at this election, in which he had not been consulted, and marched with an army into Italy. He deposed Gregory, as having been guilty of simony; and filled the papal chair with his own chancellor Heidiger, bishop of Bamberg, who assumed the name of *Clement II.* and afterwards consecrated Henry and the empress Agnes. This ceremony being over, and the Romans having sworn never to elect a pope without the appro-

bation of the reigning emperor, Henry proceeded to Capua, where he was visited by Drago, Rainulphus, and other Norman adventurers; who leaving their country at different times, had made themselves masters of great part of Apulia and Calabria, at the expense of the Greeks and Saracens. Henry entered ⁴⁶ He invests the Normans with some territories in Apulia and Calabria. into treaty with them; and not only solemnly invested them with those territories which they had acquired by conquest, but prevailed on the pope to excommunicate the Beneventines, who had refused to open their gates to him, and bestowed that city and its dependences, as fiefs of the empire, upon the Normans, provided they took possession by force of arms. The emperor was scarce returned to Germany when he received intelligence of the death of Clement II. He was succeeded in the apostolic see by Damasus II.; who also dying soon after his elevation, Henry nominated Bruno bishop of Toul to the vacant chair. This Bruno, who was the emperor's relation, immediately assumed the pontifical; but being a modest and pious prelate, he threw them off on his journey, by the persuasion of a monk of Cluny, name *Hildebrand*, afterwards the famous Gregory VII. and went to Rome as a private man. "The emperor alone (said Hildebrand) has no right to create a pope." He accompanied Bruno to Rome, and secretly retarded his election, that he might arrogate to himself the merit of obtaining it. The scheme succeeded to his wish: Bruno, who took the name of *Leo IX.* believing himself indebted to Hildebrand for the pontificate, favoured him with his particular friendship and confidence; and hence originated the power of this enterprising monk, of obscure birth, but boundless ambition, who governed Rome so long, and whose zeal for the exaltation of the church occasioned so many troubles to Europe.

Leo soon after his elevation waited on the emperor at Worms, to crave assistance against the Norman princes, who were become the terror of Italy, and treated their subjects with great severity. Henry furnished the pope with an army; at the head of which he marched against the Normans, after having excommunicated them, accompanied by a great number of bishops and other ecclesiastics, who were all either killed or taken prisoners, the Germans and Italians being totally routed. Leo himself was led captive to Benevento, which the Normans were now masters of, and which Henry had granted to the pope in exchange for the fief of Bamberg in Germany; and the apostolic see is to this day in possession of Benevento, by virtue of that donation. The Normans, however, who had a right to the city by a prior grant, restored it, in the mean time, to the princes of Lombardy; and Leo was treated with so much respect by the conquerors, that he revoked the sentence of excommunication, and joined his sanction to the imperial investiture for the lands which they held in Apulia and Calabria. Leo died soon after his release; and the emperor about the same time caused his infant son, afterwards ⁴⁷ Henry IV. declared king of the Romans. the famous Henry IV. to be declared king of the Romans, a title still in use for the acknowledged heir of the empire. Gebhard, a German bishop, was elected pope, under the name of *Viktor II.* and confirmed by the address of Hildebrand, who waited on the emperor in person for that purpose, though he disdained

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to consult him beforehand. Perhaps Hildebrand would not have found this task so easy, had not Henry been involved in a war with the Hungarians, who pressed him hard, but whom he obliged at last to pay a large tribute, and furnish him annually with a certain number of fighting men.

As soon as the emperor had finished this war and others to which it gave rise, he marched into Italy to inspect the conduct of his sister Beatrice, widow of Boniface marquis of Mantua, and made her prisoner. She had married Gozelo, duke of Lorraine, without the emperor's consent; and contracted her daughter Matilda, by the marquis of Mantua, to Godfrey duke of Spoleto and Tuscany, Gozelo's son by a former marriage. This formidable alliance justly alarmed Henry; he therefore attempted to dissolve it, by carrying his sister into Germany, where he died soon after his return, in the 39th year of his age, and the 16th of his reign.

This emperor, in his last journey to Italy, concluded an alliance with Contarini, doge of Venice. That republic was already rich and powerful, though it had only been enfranchised in the year 998, from the tribute of a mantle of cloth of gold, which it formerly paid, as a mark of subjection to the emperors of Constantinople. Genoa was the rival of Venice in power and in commerce, and was already in possession of the island of Corsica which the Genoese had taken from the Saracens. These two cities ingrossed at this time almost all the trade of Europe. There was no city in any respect equal to them either in France or Germany.

48
Increase of
the pope's
power.

Henry IV. was only five years old at his father's death. The popes made use of the respite given them by his minority, to shake off in a great measure their dependence upon the emperors. After a variety of contests about the pontificate, Nicholas II. a creature of Hildebrand's, was elected; who, among others, passed the following celebrated decree, viz. That for the future, the cardinals only should elect the pope; and that the election should afterwards be confirmed by the rest of the clergy and the people, "saving the honour (adds he) due to our dear son Henry, now king; and who, if it please God, shall be one day emperor, according to the right which we have already conferred upon him." After this he entered into a treaty with the Norman princes above mentioned; who, though they had lately sworn to hold their possessions from the emperor, now swore to hold them from the pope; and hence arose the pope's claim of sovereignty over the kingdom of Naples and Sicily.

49
His contest
with the
emperor.

Thus was the power of the German emperors in Italy greatly diminished, and that of the popes proportionally exalted; of which Henry soon had sufficient evidence. For having assumed the government into his own hands in the year 1072, being then 22 years of age, he was summoned by Alexander II. to appear before the tribunal of the holy see, on account of his loose life, and to answer the charge of having exposed the investiture of bishops to sale; at the same time that the pope excited his German subjects to rebel against him. The rebels, however, were defeated, and peace was restored to Germany: but soon after, Hildebrand above mentioned being elected to the pontificate under the name of Gregory VII. openly assumed the superiority over every earthly mo-

Italy.

narch whatever. He began with excommunicating every ecclesiastic who should receive a benefice from the hands of a layman, and every layman who should take upon him to confer such a benefice. Henry, instead of resenting this insolence, submitted, and wrote a penitential letter to the pope; who, upon this, condescended to take him into favour, after having severely reprimanded him for his loose life; of which the emperor now confessed himself guilty.

The quarrel between the church and the emperor was, however, soon brought to a crisis by the following accident. Solomon, king of Hungary, being deposed by his brother Geysa, had fled to Henry for protection, and renewed the homage of Hungary to the empire. Gregory, who favoured Geysa, exclaimed against this act of submission; and said in a letter to Solomon, "You ought to know that the kingdom of Hungary belongs to the Roman church; and learn that you will incur the indignation of the holy see, if you do not acknowledge that you hold your dominions of the pope and not of the emperor." Henry, though highly provoked at this declaration, thought proper to treat it with neglect; upon which Gregory resumed the dispute about investitures. The predecessors of Henry had always enjoyed the right of nominating bishops and abbots, and of giving them investiture by the cross and the ring. This right they had in common with almost all princes. The predecessors of Gregory VII. had been accustomed, on their part, to send legates to the emperors, in order to treat their assistance, to obtain their confirmation, or desire them to come and receive the papal sanction, but for no other purpose. Gregory, however, sent two legates to summon Henry to appear before him as a delinquent, because he still continued to bestow investitures, notwithstanding the apostolic decree to the contrary; adding, that if he should fail to yield obedience to the church, he must expect to be excommunicated and dethroned. Incensed at this arrogant message from one whom he considered as his vassal, Henry dismissed the legates with very little ceremony, and in 1066 convoked an assembly of all the princes and dignified ecclesiastics at Worms; where, after mature deliberation, they concluded, that Gregory having usurped the chair of St Peter by indirect means, infected the church of God with a great many novelties and abuses, and deviated from his duty to his sovereign in several scandalous attempts, the emperor, by that supreme authority derived from his predecessors, ought to divest him of his dignity, and appoint another in his place. In consequence of this determination, Henry sent an ambassador to Rome, with a formal deprivation of Gregory; who, in his turn, convoked a council, at which were present 110 bishops, who unanimously agreed that the pope had just cause to depose Henry, to dissolve the oath of allegiance which the princes and states had taken in his favour, and to prohibit them from holding any correspondence with him on pain of excommunication; which was immediately fulminated against the emperor and his adherents. "In the name of Almighty God, and by our authority (said Gregory), I prohibit Henry, the son of our emperor Henry, from governing the Teutonic kingdom and Italy: I release all Christians from their oath of allegiance to him; and strictly forbid all persons from serving or attending him as king!" The circular

50
The emperor
deposes
the pope.

51
And he the
emperor;

^{Italy.} cular letters written by this pontiff breathe the same spirit with his sentence of deposition. He there repeats several times, that "bishops are superior to kings, and made to judge them!" expressions alike artful and presumptuous, and calculated for bringing in all the churchmen of the world to his standard.

Gregory knew well what consequences would follow the thunder of the church. The German bishops came immediately over to his party, and drew along with them many of the nobles: the flame of civil war still lay smothering, and a bull properly directed was sufficient to set it in a blaze. The Saxons, Henry's old enemies, made use of the papal displeasure as a pretence for rebelling against him. Even Guelfe, to whom the emperor had given the duchy of Bavaria, supported the malecontents with that power which he owed to his sovereign's bounty: nay, those very princes and prelates who had assisted in deposing Gregory, gave up their monarch to be tried by the pope; and his holiness was solicited to come to Augsburg for that purpose.

Willing to prevent this odious trial at Augsburg, Henry took the unaccountable resolution of suddenly passing the Alps at Tirol, accompanied only by a few domestics, to ask absolution of Pope Gregory his oppressor; who was then in Canosa, on the Apennine mountains, a fortress belonging to the countess or duchess Matilda above mentioned. At the gates of this place the emperor presented himself as an humble penitent. He alone was admitted without the outer court; where, being stripped of his robes, and wrapped in sack cloth, he was obliged to remain three days, in the month of January, bare-footed and fasting, before he was permitted to kiss the feet of his holiness; who all that time was shut up with the devout Matilda, whose spiritual director he had long been, and, as some say, her gallant. But be that as it may, her attachment to Gregory, and her hatred to the Germans, was so great, that she made over all her estates to the apostolic see; and this donation is the true cause of all the wars which since that period have raged between the emperors and the popes. She possessed in her own right great part of Tuscany, Mantua, Parma, Reggio, Placentia, Ferrara, Modena, Verona, and almost the whole of what is now called the *patrimony of St Peter*, from Viterbo to Orvieto; together with part of Umbria, Spoleto, and the Marche of Ancona.

The emperor was at length permitted to throw himself at the pontiff's feet; who condescended to grant him absolution, after he had sworn obedience to him in all things, and promised to submit to his solemn decision at Augsburg: so that Henry got nothing but disgrace by his journey; while Gregory, elated by his triumph, and now looking upon himself (not altogether without reason) as the lord and master of all the crowned heads in Christendom, said in several of his letters, that it was his duty "to pull down the pride of kings."

This extraordinary accommodation gave much disgust to the princes of Italy. They never could forgive the insolence of the pope, nor the abject humility of the emperor. Happily, however, for Henry, their indignation at Gregory's arrogance overbalanced their detestation of his meanness. He took advantage of this temper; and by a change of fortune, hitherto unknown

to the German emperors, he found a strong party in Italy, when abandoned in Germany. All Lombardy took up arms against the pope, while he was raising all Germany against the emperor. Gregory, on the other hand, made use of every art to get another emperor elected in Germany; and Henry, on his part, left nothing undone to persuade the Italians to elect another pope. The Germans chose Rodolph, duke of Suabia, who was solemnly crowned at Metz; and Gregory, hesitating on this occasion, behaved truly like the supreme judge of kings. He had deposed Henry, but still it was in his power to pardon that prince: he therefore affected to be displeased that Rodolph was consecrated without his order; and declared, that he would acknowledge as emperor and king of Germany, him of the two competitors who should be most submissive to the holy see.

Henry, however, trusting more to the valour of his troops than to the generosity of the pope, set out immediately for Germany, where he defeated his enemies in several engagements: and Gregory, seeing no hopes of submission, thundered out a second sentence of excommunication against him, confirming at the same time the election of Rodolph, to whom he sent a golden crown, on which the following well-known verse, equally haughty and puerile, was engraved:

Petra dedit Petro, Petrus diadema Rodolpho.

This donation was also accompanied with a most enthusiastic anathema against Henry. After depriving him of *strength in combat*, and condemning him *never to be victorious*, it concludes with the following remarkable apostrophe to St Peter and St Paul: "Make all men sensible, that as you can bind and loose every thing in heaven, you can also upon earth take from or give to every one, according to his deserts, empires, kingdoms, principalities—let the kings and the princes of the age then instantly feel your power, that they may not dare to despise the orders of your church; let your justice be so speedily executed upon Henry, that nobody may doubt but he falls by your means, and not by chance."

In order to avoid the effects of this second excommunication, Henry assembled at Brixen, in the county of Tirol, about 20 German bishops: who acting also for the bishops of Lombardy, unanimously resolved, that the pope, instead of having power over the emperor, owed him obedience and allegiance; and that Gregory VII. having rendered himself unworthy of the papal chair by his conduct and rebellion, ought to be deposed from a dignity he so little deserved. They accordingly degraded Hildebrand; and elected in his room Guibert, archbishop of Ravenna, a person of undoubted merit, who took the name of *Clement III.* Henry promised to put the new pope in possession of Rome: but he was obliged, in the mean time, to employ all his forces against his rival Rodolph, who had reassembled a large body of troops in Saxony. The two armies met near Merzburg, and both fought with great fury; but the fortune of the day seemed inclined to Rodolph, when his hand was cut off by the famous Godfrey of Bouillon, then in the service of Henry, and afterwards renowned for his conquest of Jerusalem. Discouraged by the misfortune of their chief, the rebels immediately gave way; and Rodolph perceiving his end approaching, ordered the hand that was cut

Italy.

⁵³ Rodolph chosen emperor of Germany.

⁵² Who is at last obliged to submit.

⁵⁴ Defeated.

and killed.

off

Italy. off to be brought him, and made a speech to his officers on the occasion, which could not fail to have an influence on the emperor's affairs. "Behold (said he) the hand with which I took the oath of allegiance to Henry; and which oath, at the instigation of Rome, I have violated, in perfidiously aspiring at an honour that was not my due."

55
Rome
taken by
Henry IV.

Thus delivered from this formidable antagonist, Henry soon dispersed the rest of his enemies in Germany, and set out for Italy in order to settle Clement in the papal chair. But the gates of Rome being shut against him, he was obliged to attack it in form. The siege continued upwards of two years; Henry during that time being obliged to quell some insurrections in Germany. The city was at length carried by assault, and with difficulty saved from being pillaged; but Gregory was not taken: he retired into the castle of St Angelo, and thence defied and excommunicated the conqueror. The new pope was, however, consecrated with the usual ceremonies; and expressed his gratitude by crowning Henry, with the concurrence of the Roman senate and people. Mean while the siege of St Angelo was going on; but the emperor being called about some affairs into Lombardy, Robert Guiscard took advantage of his absence to release Gregory, who died soon after at Salerno. His last words, borrowed from the Scripture, were worthy of the greatest saint: "I have loved justice, and hated iniquity; therefore I die in exile!"

Henry, however, did not enjoy all the advantages which might have been expected from the death of Gregory. The subsequent popes trod in the paths of their predecessor. In 1101, Pascal II. excited young Henry to rebel against his father. The emperor did all in his power to dissuade him from proceeding to extremities, but in vain. The young prince persisted in his rebellious intentions; and having by feigned submissions prevailed on the emperor to disband his army, he treacherously seized and confined him. Henry, however, found means to escape from his confinement, and attempted to engage all the sovereigns of Europe in his quarrel; but before any thing effectual could be done, he died at Liege in the year 1106.

56
Dispute be-
tween the
pope and
Henry V.

The dispute about investitures was not terminated by the deposition and death of Henry IV. His son Henry V. pursued the very same conduct for which he had deposed his father. Pascal opposed him with violence; upon which Henry gave him an invitation into Germany, to end the dispute in an amicable manner. Pascal did not think proper to accept of this invitation; but put himself under the protection of Philip I. king of France, who undertook to mediate between the contending parties. His mediation, however, proved ineffectual, and Henry was prevented by the wars in Hungary and Poland from paying any further attention to the affair of investitures. At last, having settled his affairs in Germany, he took a resolution of going to Rome, in order to settle the dispute personally with the pope. To give his arguments the greater weight, however, he marched at the head of an army of 80,000 men. Pascal received him with great appearance of friendship, but would not renounce the claim of investitures; and Henry, finding himself deceived in his expectations, ordered the pope to be

seized. The consul put the citizens in arms to defend the pope, and a battle was fought within the walls of Rome. The slaughter was so great, that the waters of the Tiber were tinged with blood. The Romans were defeated, and Pascal was taken prisoner. The latter renounced his right of investiture; solemnly swore never to resume it, and broke his oath as soon as Henry was gone, by fulminating the sentence of excommunication against him. In 1114, died the countess Matilda, who had bequeathed all her dominions to the pope, as we have already observed; but Henry thinking himself the only lawful heir, alleged, that it was not in Matilda's power to alienate her estates, which depended immediately on the empire. He therefore set out for Lombardy, and sent ambassadors to the pope, beseeching him to revoke the sentence of excommunication abovementioned. Pascal, however, would not even favour the ambassadors with an audience; but dreading the approach of Henry himself, he took refuge among the Norman princes in Apulia. Henry arrived at Rome in 1117; but being soon after obliged to leave it in order to settle some affairs in Tuscany, the pope returned to Rome, but died in a few days. On the third day after his decease, cardinal Cajetan was elected his successor, without the privity of the emperor, under the name of *Gelasius II.* The new pope was instantly deposed by Henry; who set up the archbishop of Prague, under the name of *Gregory VIII.* Gelasius, though supported by the Norman princes, was obliged to take refuge in France, where he died; and the archbishop of Vienna was elected by the cardinals then present under the name of *Calixtus II.*

The new pope attempted an accommodation with Henry; which not succeeding, he excommunicated the emperor, the antipope, and his adherents. He next set out for Rome, where he was honourably received; and Gregory VIII. was forced to retire to Sutri, a strong town garrisoned by the emperor's troops. Here he was besieged by Calixtus and the Norman princes. The city was soon taken, and Gregory thrown into prison by his competitor; but at last, the states of the empire being quite wearied out with such a long quarrel, unanimously supplicated Henry for peace. He referred himself entirely to their decision; and a diet being assembled at Wurtzburg, it was decreed that an embassy should be immediately sent to the pope, desiring that he would convoke a general council at Rome, by which all disputes might be determined. This was accordingly done, and the affair of investitures at length regulated in the following manner, viz. That the emperor should leave the communities and chapters at liberty to fill up their own vacancies, without bestowing investitures with the cross and ring; that he should restore all that he had unjustly taken from the church; that all elections should be made in a canonical manner, in presence of the emperor or his commissaries: and whatever disputes might happen, should be referred to the decision of the emperor, assisted by the metropolitan and his suffragans; that the person elected should receive from the emperor the investiture of the fiefs and secular rights, not with the cross, but with the sceptre; and should pay allegiance to him for these rights only.

After the death of Henry, the usual disorders took place

57
Determination of the
affair of investitures

Italy. place in Italy; during which, Roger duke of Apulia conquered the island of Sicily, and assumed the right of creating popes, of whom there were two at that time, viz. Innocent II. and Anacletus. Roger drove out the former, and Lothario emperor of Germany the latter, forcing Roger himself at the same time to retire into Sicily. The emperor then conducted Innocent back to Rome in triumph; and having subdued all Apulia, Calabria, and the rest of Roger's Italian dominions, erected them into a principality, and bestowed it, with the title of *duke*, upon Renaud a German prince, and one of his own relations.

In the reign of Conrad III. who succeeded Lothario, the celebrated factions called the *Guelphs* and *Gibelines**, arose, which for many years deluged the cities of Italy with blood. They took their origin during a civil war in Germany, in which the enemies of the emperor were styled *Guelphs*, and his friends *Gibelines*; and these names were quickly received in Italy as well as other parts of the emperor's dominions. Of this civil war many of the cities in Italy took the advantage to set up for themselves; neither was it in the power of Conrad, who during his whole reign was employed in unsuccessful crusades, to reduce them; but in 1158 Frederic Barbarossa, successor to Conrad, entered Italy at the head of a very numerous and well disciplined army. His army was divided into several columns for the convenience of entering the country by as many different routes. Having passed the Alps, he reduced the town of Brescia; where he made several salutary regulations for the preservation of good order and military discipline. Continuing to advance, he besieged Milan, which surrendered at discretion. He was crowned king of Lombardy at Monza; and having made himself master of all the other cities of that country, he ordered a minute inquiry to be set on foot concerning the rights of the empire, and exacted homage of all those who held of it, without excepting even the bishops. Grievances were redressed; magistracies reformed; the rights of regality discussed and ascertained; new laws enacted for the maintenance of public tranquillity and the encouragement of learning, which now began to revive in the school of Bologna; and, above all, subvassals were not only prohibited from alienating their lands, but also compelled, in their oath to their lords paramount, to except the emperor nominally, when they swore to serve and assist them against all their enemies. The pope took umbrage at this behaviour towards the ecclesiastics: but Frederic justified what he had done, telling his deputies it was but reasonable they should do homage for the fiefs they possessed; as Jesus Christ himself, though the lord of all the sovereigns upon earth, had deigned to pay for himself and St Peter the tribute which was due to Cæsar.

Frederic having sent commissaries to superintend the election of new magistrates at Milan, the inhabitants were so much provoked at this infringement of their old privileges, that they insulted the imperialists, revolted, and refused to appear before the emperor's tribunal. This he highly resented, and resolved to chastise them severely: for which purpose he sent for a reinforcement from Germany, which soon after arrived with the emperor, while he himself ravaged Liguria,

Italy. declared the Milanese rebels to the empire, and plundered and burnt the city of Crema which was in alliance with that of Milan.

In the mean time, pope Adrian IV. dying, two opposite factions elected two persons known by the names of *Victor II.* and *Alexander III.* The emperor's allies necessarily acknowledged the pope chosen by him; and those princes who were jealous of the emperor, acknowledged the other. Victor II. Frederic's pope, had Germany, Bohemia, and one half of Italy, on his side; while the rest submitted to Alexander III. The emperor took a severe revenge on his enemies; Milan was razed from the foundation, and salt strewed on its ruins; Brescia and Placentia were dismantled; and the other cities which had taken part with them were deprived of their privileges. Alexander III. however, who had excited the revolt, returned to Rome after the death of his rival; and at his return the civil war was renewed. The emperor caused another pope, and after his death a third, to be elected. Alexander then fled to France, the common asylum of every pope who was oppressed by the emperors; but the flames of civil discord which he had raised continued daily to spread. In 1168, the cities of Italy, supported by the Greek emperor and the king of Sicily, entered into an association for the defence of their liberties; and the pope's party at length prevailed. In 1176, the imperial army, worn out by fatigues and diseases, was defeated by the confederates, and Frederic himself narrowly escaped. About the same time, he was defeated at sea by the Venetians; and his eldest son Henry, who commanded his fleet, fell into the hands of the enemy. The pope, in honour of this victory, sailed out into the open sea, accompanied by the whole senate; and after having pronounced a thousand benedictions on that element, threw into it a ring as a mark of his gratitude and affection. Hence the origin of that ceremony which is annually performed by the Venetians, under the notion of espousing the Adriatic. These misfortunes disposed the emperor towards a reconciliation with the pope: but, reckoning it below his dignity to make an advance, he rallied his troops, and exerted himself with so much vigour in repairing his loss, that the confederates were defeated in a battle; after which he made proposals of peace, which were now joyfully accepted, and Venice was the place appointed for a reconciliation. The emperor, the pope, and a great many princes and cardinals, attended; and there the emperor, in 1177, put an end to the dispute, by acknowledging the pope, kissing his feet, and holding his stirrup while he mounted his mule. This reconciliation was attended with the submission of all the towns of Italy which had entered into an association for their mutual defence. They obtained a general pardon, and were left at liberty to use their own laws and forms of government, but were obliged to take the oath of allegiance to the emperor as their superior lord. Calixtus, the anti-pope, finding himself abandoned by the emperor in consequence of this treaty, made also his submission to Alexander, who received him with great humanity; and in order to prevent for the future those disturbances which had so often attended the elections of the popes, he called a general council, in which it was decreed,

Italy.

59
He takes
and de-
stroys Mi-
lan, &c.

* See
Guelphs and
Gibelines

58
Italy in-
vaded by
Frederic
Barbarossa.

60
Submits
to the popes.

Italy.

decreed, that no pope should be deemed duly elected without having two-thirds of the votes in his favour.

61.
Frederic
succeeded
by Henry
VI.

The affairs of Italy being thus settled, Barbarossa returned to Germany; and having quieted some disturbances which had arisen during his absence in Italy, at last undertook an expedition into the Holy Land; where having performed great exploits, he was drowned as he was swimming in the river Cydnus, in the year 1190. He was succeeded by his son Henry VI. who at the same time became heir to the dominions of Sicily by the right of his wife, daughter of William king of that country. After settling the affairs of Germany, the new emperor marched with an army into Italy, in order to be crowned by the pope, and to recover the succession of Sicily, which was usurped by Tancred his wife's natural brother. For this purpose, he endeavoured to conciliate the affections of the Lombards, by enlarging the privileges of Genoa, Pisa, and other cities, in his way to Rome; where the ceremony of the coronation was performed by Celestin III. on the day after Easter in the year 1191. The pope, then in the 86th year of his age, had no sooner placed the crown upon Henry's head than he kicked it off again, as a testimony of the power residing in the sovereign pontiff to make and unmake emperors at his pleasure.

The coronation being over, Henry prepared for the conquest of Naples and Sicily; but in this he was opposed by the pope: for though Celestin considered Tancred as an usurper, and desired to see him deprived of the crown of Sicily, which he claimed as a fief of the see, yet he was much more averse to the emperor's being put in possession of it, as that would render him too powerful in Italy for the interest of the church. Henry, however, without paying any regard to the threats and remonstrances of his holiness, took almost all the towns of Campania, Calabria, and Apulia; invested the city of Naples; and sent for the Genoese fleet, which he had before engaged, to come and form the blockade by sea: but before its arrival, he was obliged to raise the siege, in consequence of a dreadful mortality among his troops: and all future attempts upon Sicily were ineffectual during the life of Tancred.

62.
His per-
sily and
cruelty.

The whole reign of Henry from this time seems to have been a continued train of the most abominable perfidies and cruelties. Having treacherously seized and imprisoned Richard I. of ENGLAND, in the manner related under that article, no 128—130. he had no sooner received the ransom paid for his royal captive, than he made new preparations for the conquest of Sicily. As Tancred died about this time, the emperor, with the assistance of the Genoese, accomplished his purpose. The queen-dowager surrendered Salerno, and her right to the crown, on condition that her son William should possess the principality of Tarentum; but Henry no sooner found himself master of the place, than he ordered the infant king to be castrated, to have his eyes put out, and to be confined in a dungeon. The royal treasure was transported to Germany, and the queen and her daughter confined in a convent.

In the mean time, the empress, though near the age of 50, was delivered of a son, named *Frederic*; and No 170.

Italy.

Henry soon after assembled a diet of the princes of Germany, to whom he explained his intentions of rendering the imperial crown hereditary, in order to prevent those disturbances which usually attended the election of emperors. A decree passed for this purpose; and Frederic, yet in his cradle, was declared king of the Romans. Soon after, the emperor being solicited to undertake a crusade, obeyed the injunctions of the pope, but in such a manner as to make it turn out to his own advantage. He convoked a general diet at Worms, where he solemnly declared his resolution of employing his whole power, and even of hazarding his life, for the accomplishment of so holy an enterprise; and he expatiated upon the subject with so much eloquence, that almost the whole assembly took the cross. Nay, such multitudes from all the provinces of the empire enlisted themselves, that Henry divided them into three large armies; one of which, under the command of the bishop of Mentz, took the route of Hungary, where it was joined by Margaret, queen of that country, who entered herself in this pious expedition, and actually ended her days in Palestine: the second was assembled in Lower Saxony, and embarked in a fleet furnished by the inhabitants of Lubec, Hamburg, Holstein, and Friesland: and the emperor in person conducted the third into Italy, in order to take vengeance on the Normans in Naples and Sicily who had risen against his government.

The rebels were humbled; and their chiefs were condemned to perish by the most excruciating tortures. One Jornandi, of the house of the Norman princes, was tied naked on a chair of red-hot iron, and crowned with a circle of the same burning metal, which was nailed to his head. The empress, shocked at such cruelty, renounced her faith to her husband, and encouraged her countrymen to recover their liberties. Resolution sprung from despair. The inhabitants took themselves to arms; the empress Constantia headed them; and Henry, having dismissed his troops, no longer thought necessary to his bloody purposes, and sent them to pursue their expedition to the Holy Land, was obliged to submit to his wife, and to the conditions which she was pleased to impose on him in favour of the Sicilians. He died at Messina in 1197, soon after this treaty; and, as was supposed, of poison administered by the empress.

The emperor's son Frederic had already been declared king of the Romans, and consequently became emperor on the death of his father; but as Frederic II. was yet a minor, the administration was committed to his uncle the duke of Suabia, both by the will of Frederic II. Henry and by an assembly of the German princes. Other princes, however, incensed to see an elective empire become hereditary, held a new diet at Cologne, and chose Otho duke of Brunswick, son of Henry the Lion. Frederic's title was confirmed in a third assembly, at Arnburg; and his uncle, Philip duke of Suabia, was elected king of the Romans, in order to give greater weight to his administration. These two elections divided the empire into two powerful factions, and involved all Germany in ruin and desolation. Innocent III. who had succeeded Celestin in the papal chair, threw himself into the scale of Otho, and communicated Philip and all his adherents. This able and ambitious pontiff was a sworn enemy of the house of

63.
Disbar-
ances in
the begin-
ning of
the reign
of Frederic II.

Italy.

of Suabia; not from any personal animosity, but out of a principle of policy. That house had long been terrible to the popes, by its continual possession of the imperial crown; and the accession of the kingdom of Naples and Sicily made it still more to be dreaded: Innocent, therefore, gladly seized the present favourable opportunity for divesting it of the empire, by supporting the election of Otho, and sowing divisions among the Suabian party. Otho was also patronised by his uncle, the king of England; which naturally inclined the king of France to the side of his rival. Faction clashed with faction; friendship with interest; caprice, ambition, or resentment, gave the sway; and nothing was beheld on all hands but the horrors and the miseries of civil wars.

Meanwhile, the empress Constantia remained in Sicily, where all was peace, as regent and guardian for her infant son Frederic II. who had been crowned king of that island, with the consent of pope Celestin III. But she also had her troubles. A new investiture from the holy see being necessary, on the death of Celestin, Innocent III. his successor, took advantage of the critical situation of affairs for aggrandizing the papacy, at the expence of the kings of Sicily. They possessed, as has been already observed, the privilege of filling up vacant benefices, and of judging all ecclesiastical causes in the last appeal: they were really popes in their own island, though vassals of his holiness. Innocent pretended that these powers had been surreptitiously obtained; and demanded, that Constantia should renounce them in the name of her son, and do liege, pure and simple homage for Sicily. But before any thing was settled relative to this affair, the empress died, leaving the regency of the kingdom to the pope; so that he was enabled to prescribe what conditions he thought proper to young Frederic. The troubles of Germany still continued; and the pope redoubled his efforts, to detach the princes and prelates from the cause of Philip, notwithstanding the remonstrances of the king of France, to whom he proudly replied, "Either Philip must lose the empire, or I the papacy." But all these dissensions and troubles in Europe did not prevent the formation of another crusade, or expedition into Asia, for the recovery of the Holy Land. Those who took the cross were principally French and Germans: Baldwin, count of Flanders, was their commander; and the Venetians, as greedy of wealth and power as the ancient Carthaginians, furnished them with ships, for which they took care to be amply paid both in money and territory. The Christian city of Zara, in Dalmatia, had withdrawn itself from the government of the republic: the army of the cross undertook to reduce it to obedience; and it was besieged and taken, notwithstanding the threats and excommunications of the pope.

While the crusaders were spreading desolation through the east, Philip and Otho were in like manner desolating the west. At length Philip prevailed; and Otho, obliged to abandon Germany, took refuge in England. Philip, elated with success, confirmed his election by a second coronation, and proposed an accommodation with the pope, as the means of finally establishing his throne; but before it could be brought about, he fell a sacrifice to private revenge, being assassinated by the count Palatine of Bavaria, whose daugh-

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ter he had promised to marry, and afterwards rejected. Otho returned to Germany on the death of Philip; married that prince's daughter; and was crowned at Rome by pope Innocent III. after yielding to the holy see the long disputed inheritance of the countess Matilda, and confirming the rights and privileges of the Italian cities. But these concessions, as far at least as regarded the pope, were only a sacrifice to present policy: Otho, therefore, no sooner found himself in a condition to act offensively, than he resumed his grant; and in 1210 not only recovered the possessions of the empire, but made hostile incursions into Apulia, ravaging the dominions of young Frederic king of Naples and Sicily, who was under the protection of the holy see. For this reason he was excommunicated by Innocent; and Frederic, now 17 years of age, was elected emperor by a diet of the German princes. Otho, however, on his return to Germany, finding his party still considerable, and not doubting but he should be able to humble his rival by means of his superior force, entered into an alliance with his uncle John king of England, against Philip Augustus king of France, A. D. 1213. The unfortunate battle of Bouvines, where the confederates were defeated, completed the fate of Otho. He attempted to retreat into Germany, but was prevented by young Frederic; who had marched into the empire at the head of a powerful army, and was every where received with open arms. Thus abandoned by all the princes of Germany, and altogether without recourse, Otho retired to Brunswick, where he lived four years as a private man, dedicating his time to the duties of religion.

Frederic II. being now universally acknowledged emperor, was crowned at Aix la-Chapelle in 1215, with great magnificence; when, in order to preserve the favour of the pope, he added to the other solemnities of his coronation a vow to go in person to the Holy Land.

The bad success of this expedition hath been already taken notice of under the article *CROISADE*. The emperor had, on various pretences, refused to go into the east; and in 1225, the pope, incensed at the loss of Damietta, wrote a severe letter to him, taxing him with having sacrificed the interests of Christianity by the delaying so long the performance of his vow, and threatening him with immediate excommunication if he did not instantly depart with an army into Asia. Frederic, exasperated at these reproaches, renounced all correspondence with the court of Rome; renewed his ecclesiastical jurisdiction in Sicily; filled up vacant sees and benefices; and expelled some bishops, who were creatures of the pope, on pretence of their being concerned in practices against the state.

The pope at first threatened the emperor with the thunder of the church, for presuming to lift up his hand against the sanctuary; but finding Frederic not to be intimidated, he became sensible of his own impudence in wantonly incurring the resentment of so powerful a prince, and thought proper to soothe him by submissive apologies and gentle exhortations. They were accordingly reconciled, and conferred together at Veroli in 1226; where the emperor, as a proof of his sincere attachment to the church, published some very severe edicts against heresy, which seem to have authorised the tribunal of the inquisition. A solemn assembly

3 C

was

Italy.

was afterwards held at Ferentino, where both the pope and the emperor were present, together with John de Brienne, titular king of Jerusalem, who was come to Europe to demand succours against the foldan of Egypt. John had an only daughter named *Tolanda*, whom he proposed as a wife to the emperor, with the kingdom of Jerusalem as her dower, on condition that Frederic should within two years perform the vow he had made to lead an army into the Holy Land. Frederic married her on these terms, because he chose to please the pope; and since that time the kings of Sicily have taken the title of *king of Jerusalem*. But the emperor was in no hurry to go and conquer his wife's portion, having business of more importance on his hands at home. The chief cities of Lombardy had entered into a secret league, with a view to renounce his authority. He convoked a diet at Cremona, where all the German and Italian noblemen were summoned to attend. A variety of subjects were there discussed; but nothing of consequence was settled. An accommodation, however, was soon after brought about by the mediation of the pope; who, as umpire of the dispute, decreed, that the emperor should lay aside his resentment against the confederate towns, and that the towns should furnish and maintain 400 knights for the relief of the Holy Land.

Peace being thus concluded, Honorius reminded the emperor of his vow; Frederic promised compliance: but his holiness died before he could see the execution of a project which he seemed to have so much at heart. He was succeeded in the papal chair by Gregory IX. brother of Innocent III.; who, pursuing the same line of policy, urged the departure of Frederic for the holy land; and finding the emperor still backward, declared him incapable of the imperial dignity, as having incurred the sentence of excommunication. Frederic, incensed at such insolence, ravaged the patrimony of St Peter; and was actually excommunicated. The animosity between the Guelphs and Ghibellines revived; the pope was obliged to quit Rome; and Italy became a scene of war and desolation, or rather of an hundred civil wars; which, by inflaming the minds and exciting the resentment of the Italian princes, accustomed them but too much to the horrid practices of poisoning and assassination.

65
His expedition to the Holy Land.

During these transactions, Frederic, in order to remove the cause of all these troubles, and gratify the prejudices of a superstitious age, by the advice of his friends resolved to perform his vow: and he accordingly embarked for the Holy Land, leaving the affairs of Italy to the management of Renaldo duke of Spoleto. The pope prohibited his departure before he should be absolved from the censures of the church; but Frederic went in contempt of the church, and succeeded better than any person who had gone before him. He did not indeed desolate Asia, and gratify the barbarous zeal of the times by spilling the blood of infidels; but he concluded a treaty with Miliden, foldan of Egypt and master of Syria; by which the end of his expedition seemed fully answered. The foldan ceded to him Jerusalem and its territory as far as Joppa; Bethlehem, Nazareth, and all the country between Jerusalem and Ptolemais; Tyre, Sidon, and the neighbouring territories: in return for which, the emperor granted the Saracens a truce of ten years; and in 1230

prudently returned to Italy, where his presence was much wanted. Italy.

Frederic's reign, after his return from the east, was one continued quarrel with the popes. The cities of Lombardy had revoked during his absence, at the instigation of Gregory IX.; and before they could be reduced, the same pontiff excited the emperor's son Henry, who had been elected king of the Romans, to rebel against his father. The rebellion was suppressed, the prince was confined, and the emperor obtained a complete victory over the associated towns. But his troubles were not yet ended. The pope excommunicated him anew, and sent a bull, filled with the most absurd and ridiculous language, into Germany, in order to sow division between Frederic and the princes of the empire.

Frederic retorted in the same strain, in his apology to the princes of Germany, calling Gregory *the Great Dragon*, the *Antichrist*, &c. The emperor's apology was sustained in Germany; and finding he had nothing to fear from that quarter, he resolved to take ample vengeance on the pope and his associates. For that purpose he marched to Rome, where he thought his party was strong enough to procure him admission; but this favourite scheme was defeated by the activity of Gregory, who ordered a crusade to be preached against the emperor, as an enemy of the Christian faith; a step which incensed Frederic so much, that he ordered all his prisoners who wore the cross to be exposed to the most cruel tortures. The two factions of the Guelphs and Ghibellines continued to rage with greater violence than ever, involving cities, districts, and even private families, in troubles, divisions, and civil butchery; no quarter being given on either side. Meanwhile Gregory IX. died, and was succeeded in the see of Rome by Celestin IV. and afterwards by Innocent IV. formerly cardinal Fiesque, who had always expressed the greatest regard for the emperor and his interest. Frederic was accordingly congratulated upon this occasion: but having more penetration than those about him, he sagely replied, "I see little reason to rejoice; the cardinal was my friend, but the pope will be my enemy." Innocent soon proved the justice of this conjecture. He attempted to negotiate a peace for Italy; but not being able to obtain from Frederic his exorbitant demands, and in fear for the safety of his own person, he fled into France, assembled a general council at Lyons, and in 1245 deposed the emperor. 66

Conrad, the emperor's second son, had already been declared king of the Romans, on the death of his brother Henry, which soon followed his confinement: but the empire being now declared vacant by the pope, the German bishops (for none of the princes were present), at the instigation of his holiness, proceeded to the election of a new emperor; and they chose Henry landgrave of Thuringia, who was styled in derision, *The king of priests*. Innocent now renewed the crusade against Frederic. It was proclaimed by the preaching friars, since called *Dominicans*, and the minor friars, known by the name of *Cordeliers* or *Franciscans*. The pope, however, did not confine himself to these measures only, but engaged in conspiracies against the life of an emperor who had dared to resist the decree of a council, and oppose the whole body of the monks and zealots.

Italy. zealots. Frederic's life was several times in danger from plots, poisonings, and assassinations; which induced him, it is said, to make choice of Mahometan guards, who, he was certain, would not be under the influence of the prevailing superstition.

About this time the landgrave of Thuringia dying, the same prelates who had taken the liberty of creating one emperor made another; namely, William count of Holland, a young nobleman of 20 years of age, who bore the same contemptuous title with his predecessor. Fortune, which had hitherto favoured Frederic, seemed now to desert him. He was defeated before Parma, which he had long besieged; and to complete his misfortune, he soon after learned, that his natural son Entius, whom he had made king of Sardinia, was worsted and taken prisoner by the Bolognese.

In this extremity Frederic retired to his kingdom of Naples, in order to recruit his army; and there died of a fever in the year 1250. After his death, the affairs of Germany fell into the utmost confusion, and Italy continued long in the same distracted state in which he had left it. The clergy took arms against the laity; the weak were oppressed by the strong; and all laws divine and human were disregarded. After the death of Frederic's son Conrad who had assumed the imperial dignity as successor to his father, and the death of his competitor William of Holland, a variety of candidates appeared for the empire, and several were elected by different factions; among whom was Richard earl of Cornwall, brother to Henry II. king of England; but no emperor was properly acknowledged till the year 1273, when Rodolph, count of Hapsburg, was unanimously raised to the vacant throne. During the interregnum which preceded the election of Rodolph, Denmark, Holland, and Hungary, entirely freed themselves from the homage they were wont to pay to the empire; and much about the same time several German cities erected a municipal form of government, which still continues. Lubec, Cologne, Brunswick, and Dantzic, united for their mutual defence against the encroachments of the great lords, by a famous association, called the *Hanseatic league*; and these towns were afterwards joined by 80 others, belonging to different states, which formed a kind of commercial republic. Italy also, during this period, assumed a new plan of government. That freedom for which the cities of Lombardy had so long struggled, was confirmed to them for a sum of money: they were emancipated by the fruits of their industry. Sicily likewise changed its government and its prince; of which revolution a particular account is given under the article SICILY.

From the time of Frederic II. we may date the ruin of the German power in Italy. The Florentines, the Pisans, the Genoese, the Luccans, &c. became independent, and could not again be reduced. The power of the emperor, in short, was in a manner annihilated, when Henry VII. undertook to restore it in the beginning of the 14th century. For this purpose a diet was held at Francfort, where proper supplies being granted for the emperor's journey, well known by the name of the *Roman expedition*, he set out for Italy, accompanied by the dukes of Austria and Bavaria, the archbishop of Trier, the bishop of Liege, the counts

of Savoy and Flanders, and other noblemen, together with the militia of all the imperial towns. Italy was still divided by the factions of the Guelphs and Ghibelines, who butchered one another without humanity or remorse. But their contest was no longer the same: it was not now a struggle between the empire and the priesthood, but between faction and faction, inflamed by mutual jealousies and animosities. Pope Clement V. had been obliged to leave Rome, which was in the anarchy of popular government. The Colonnas, the Ursini, and the Roman barons, divided the city; and this division was the cause of a long abode of the popes in France, so that Rome seemed equally lost to the popes and the emperors. Sicily was in the possession of the house of Arragon, in consequence of the famous massacre called the *Sicilian vespers*, which delivered that island from the tyranny of the French*. Carobert, king of Hungary, disputed the kingdom of Naples with his uncle Robert, son of Charles II. of the house of Anjou. The house of Este had established itself at Ferrara; and the Venetians wanted to make themselves masters of that country. The old league of the Italian cities no longer subsisted. It had been formed with no other view than to oppose the emperors; and since they had neglected Italy, the cities were wholly employed in aggrandizing themselves, at the expence of each other. The Florentines and the Genoese made war upon the republic of Pisa. Every city was also divided into factions within itself. In the midst of these troubles Henry VII. appeared in Italy in the year 1311, and caused himself to be crowned king of Lombardy at Milan. But the Guelphs had concealed the old iron crown of the Lombard kings, as if the right of reigning were attached to a small circlet of metal. Henry ordered a new crown to be made, with which the ceremony of inauguration was performed.

Cremona was the first place that ventured to oppose the emperor. He reduced it by force, and laid it under heavy contributions. Parma, Vicenza, and Placentia, made peace with him on reasonable conditions. Padua paid 100,000 crowns, and received an imperial officer as governor. The Venetians presented Henry with a large sum of money, an imperial crown of gold enriched with diamonds, and a chain of very curious workmanship. Brescia made a desperate resistance, and sustained a very severe siege; in the course of which the emperor's brother was slain, and his army diminished to such a degree, that the inhabitants marched out under the command of their prefect Thibault de Drussati, and gave him battle: but they were repulsed with great loss, after an obstinate engagement; and at last obliged to submit, and their city was dismantled. From Brescia Henry marched to Genoa, where he was received with expressions of joy, and splendidly entertained. He next proceeded to Rome; where, after much bloodshed, he received the imperial crown from the hands of the cardinals. Clement V. who had originally invited Henry into Italy, growing jealous of his success, had leagued with Robert king of Naples and the Ursini faction, to oppose his entrance into Rome. He entered it in spite of them by the assistance of the Colonnas. Now master of that ancient city, Henry appointed it a governor; and ordered, that all the cities and states of I-

67
Decline of
the power
of the Ger-
man em-
perors.

68
Expedition
of Henry
VII. into
Italy.

Italy.

Italy should pay him an annual tribute. In this order he comprehended the kingdom of Naples, to which he was going to make good his claim of superiority by arms, when he died at Benevento in 1313, as is commonly supposed, of poison given him by a Dominican friar, in the consecrated wine of the sacrament.

69
State of
Italy since
that time.

The efforts of Henry VII. were unable to restore the imperial power in Italy. From this time the authority of the emperor in that country consisted in a great measure in the conveniency which the Ghibelines found in opposing their enemies under the sanction of his name. The power of the pope was much of the same nature. He was less regarded in Italy than in any other country in Christendom. There was indeed a great party who called themselves *Guelphs*; but they affected this distinction only to keep themselves independent of the imperialists; and the states and princes who called themselves *Guelphs* paid little more acknowledgment to his holiness than sheltering themselves under his name and authority. The most desperate wars were carried on by the different cities against each other; and in these wars Castruccio Castraccani, and Sir John Hawkwood an Englishman, are celebrated as heroes. A detail of these transactions would furnish materials for many volumes; and after all seems to be but of little importance, since nothing material was effected by the utmost efforts of valour, and the belligerent states were commonly obliged to make peace without any advantage on either side. By degrees, however, this martial spirit subsided; and in the year 1492, the Italians were so little capable of resisting an enemy, that Charles VIII. of France conquered the whole kingdom of Naples in six weeks, and might easily have subdued the whole country had it not been for his own imprudence. Another attempt on Italy was made by Louis XII. and a third by Francis I. as related under the article FRANCE. In the reigns of Louis XIII. and XIV. an obstinate war was carried on between the French and Spaniards, in which the Italian states bore a very considerable share. The war concluded in 1660, with very little advantage to the French, who have been always unsuccessful in their Italian wars. The like bad success attended them in that part of the world, in the war which commenced between Britain and Spain in the year 1740. But the particulars of these wars, with regard to the different states of Italy, naturally fall to be considered under the history of those states into which the country is now divided; viz. Sardinia, Milan or the Milanese, Genoa, Venice, Tuscany or Florence, Lucca, St Marino, Parma, Mantua, Modena, Rome, and Naples.

70
Air, &c. of
Italy.

The air of Italy is very different, according to the different situations of the several countries contained in it. In those on the north of the Apennines it is more temperate, but on the south it is generally very warm. The air of the Campania of Rome, and of the Ferrarese, is said to be unhealthy; which is owing to the lands not being duly cultivated, nor the marshes drained. That of the other parts is generally pure, dry, and healthy. In summer, the heat is very great in the kingdom of Naples; and would be almost intolerable, if it was not somewhat alleviated by the sea-breezes. The soil of Italy in general is very fertile, being watered by a great number of rivers. It produces a great

variety of wines, and the best oil in Europe; excellent silk in abundance; corn of all sorts, but not in such plenty as in some other countries; oranges, lemons, citrons, pomegranates, almonds, raisins, sugar, mulberry-trees without number, figs, peaches, nectarines, apricots, pears, apples, filberts, chestnuts, &c. Most of these fruits were at first imported by the Romans from Asia Minor, Greece, Africa, and Syria, and were not the natural products of the soil. The tender plants are covered in winter on the north side of the Apennines, but on the south side they have no need of it. This country also yields good pasture; and abounds with cattle, sheep, goats, buffaloes, wild boars, mules, and horses. The forests are well stored with game; and the mountains yield not only mines of iron, lead, alum, sulphur, marble of all sorts, alabaster, jasper, porphyry, &c. but also gold and silver; with a great variety of aromatic herbs, trees, shrubs, and ever-greens, as thyme, lavender, laurel, and bays, wild olive-trees, tamarinds, juniper, oaks, and pines.

A very extensive trade is carried on in many places in Italy, particularly at Leghorn, Genoa, Bologna, Venice, and Naples; the country having a great variety of commodities and manufactures for exportation, especially wine, oil, perfumes, fruits, and silks. Travellers also bring large sums of money into Italy, besides what they lay out in pictures, curiosities, relics, antiquities, &c.

The Italians are generally well proportioned, though ⁷¹ Drefs, dif- their complexions are none of the best. As to dress, position, &c. of the they follow the fashions of the countries on which they inhabitants border, or to which they are subject; namely, those of France, Spain, and Germany. With respect to their genius and taste in architecture, painting, carving, and music, they are thought to excel greatly, and to leave the other nations of Europe far behind them; but their music seems too soft and effeminate to deserve all the praise bestowed on it; and their houses are far inferior to those of England in respect of convenience. No country hath produced better politicians, historians, poets, painters, and sculptors; we mean since the revival of the arts and sciences, exclusive of those of ancient times. The Italians are very affable, courteous, ingenious, sober, and ready witted; but extremely jealous, vindictive, lascivious, ceremonious, and superstitious. In respect to jealousy, indeed, we are told, that a very extraordinary change has lately taken place; and that the Italians are now no less indulgent, and complaisant to their wives than the most polite husbands in France itself. In their tempers, the Italians seem to be a good medium between the French and Spaniards; neither so gay and volatile as the one, nor so grave and solemn as the other. Boiled snails, served up with oil and pepper, or fried in oil, and the hinder parts of frogs, are reckoned dainty dishes. Kites, jackdaws, hawks, and magpies, are also eaten not only by the common people but by the better sort. Wine is drank here both in summer and winter cooled by ice or snow. The women affect yellow hair, as the Roman ladies and courtezans formerly did. They also use paint and washes, both for their hands and faces. The day here is reckoned from sun-set to sun-set, as the Athenians did of old.

ITCH, a cutaneous disease, appearing in small watery.

Itch,
Itca.

watery pustules on the skin; commonly of a mild nature, though sometimes attended with obstinate and dangerous symptoms. See *MEDICINE-Index*.

Itch-Insect. See *ACARUS*.

In speaking of the manner of finding these insects in the itch, Fabricius observes, that the failure of many who have sought for them has been owing to their having expected to meet with them in the larger vesicles that contain a yellowish fluid like pus; in these, however, he tells us, he has never found them, but in those pustules only which are recent, and contain only a watery fluid. We must therefore, he observes, not expect to find them in the same proportionate number in patients who for many months have been afflicted with the disease, as in those in whom its appearance is recent, and where it is confined to the fingers or wrists. The cause of this difference with respect to the pustules, he conjectures, may be owing to the death of the insect after it has deposited its eggs.

A small transparent vesicle being found, a very minute white point, distinct from the surrounding fluid, may be discovered, and very often even without the assistance of a glass; this is the insect, which may be easily taken out on the point of a needle or penknife, and when placed on a green cloth may be seen much more distinctly, and observed to move.

The author remarks, that even before such a transparent vesicle is formed, we may often discover traces of the insect on the fingers or hands, in a reddish streak or furrow, which is occasioned by the acarus; and he adds, that it is even more usual to find it in these furrows than in the pustules themselves. He tells us, that a friend of his at Hanover (who had the itch in a slight degree, and to whose accurate inquiries with an excellent microscope he acknowledges himself much indebted) found several insects in such furrows. Two of the longest of the furrows were about an inch in extent. They seemed to be thoroughly dry, but exhibited here and there very minute shining and transparent spots. These spots, however, were not at all elevated above the surface of the skin; and although several of them were opened and examined, no insect was found in them. These furrows he has observed only on the hands and fingers, having in vain sought for them on the legs and other parts of the body, in his children, who had the itch in a high degree.

ITEA, in botany: A genus of the monogynia order, belonging to the pentandria class of plants; and in the natural method ranking with those of which the order is doubtful. The petals are long, and inserted into the calyx; the capsule unilocular and bivalved. There is but one species, a native of North America. It grows by the sides of rivers, and in other parts where the ground is moist. It rises to the height of eight or ten feet, sending out many branches garnished with spear-shaped leaves placed alternately, and slightly sawed on their edges, of a light green colour. At the extremity of the branches are produced fine spikes of white flowers three or four inches long, standing erect. When these shrubs are in vigour, they will be entirely covered with flowers, so that they make a beautiful appearance during the flowering season, which is in July. They are propagated by layers, and are not injured by the cold of this climate; but are apt to die in summer, if they are planted on a dry

gravelly soil. The shoots should be laid down in autumn, and will be rooted in one year.

ITHACA (anc. geog.), an island in the Ionian sea, on the coast of Epirus; the country of Ulysses, near Dulichium, with a town and port situated at the foot of mount Neius. According to Pliny it is about 25 miles in compass; according to Artemidorus only 10; and is now found to be only eight miles round. It is now uninhabited, and called *Jabaco*.

ITINERARY. *ITINERARIUM*; a journal or an account of the distances of places. The most remarkable is that which goes under the names of *Antoninus* and *Ethicus*; or, as Barthius found in his copy, *Antoninus Ethicus*; a Christian writer, posterior to the times of Constantine. Another, called *Hierosolymitanum*, from Bourdeaux to Jerusalem, and from Heraclea through Aulona and Rome to Milan, under Constantine. *Itinerarium* denotes a day's march.

ITIUS PORTUS (anc. geog.), the *crux geographorum*, such being the difficulty of ascertaining its position. It would be endless to recite the several opinions concerning it, with the several reasons advanced in support of them. Three ports are mentioned by Cæsar; two without any particular name, viz. the Higher and the Lower, with respect to the *Portus Itius*. Calais, Boulogne, St Omer, and Whitland, have each in their turn had their several advocates. Cæsar gives two distinctive characters or marks which seem to agree equally to Boulogne, and Whitland, namely, the shortness of the passage, and the situation between two other ports; therefore nothing can with certainty be determined about the situation of the *Portus Itius*.

ITTIGIUS (Thomas), a learned professor of divinity at Leipzig, and son of John Ittigius, professor of physic in the same university. He first published a Treatise upon Burning Mountains; after which he became a minister, and exercised that function in various churches there. He furnished several papers in the Leipzig acts, besides publishing some historical works and dissertations. He died in 1710.

ITYS (fab. hist.), a son of Tereus king of Thrace, by Procne daughter of Pandion king of Athens. He was killed by his mother when he was about six years old, and served up before his father. He was changed into a pheasant, his mother into a swallow, and his father into an owl.

ITZECUINTEPOTZOTLI, or *HUNCH-BACKED Plate Dog*, a Mexican quadruped similar to a dog. It is as large as a Maltese dog, the skin of which is varied with white, tawny, and black. Its head is small in proportion to its body, and appears to be joined directly to it on account of the shortness and greatness of its neck; its eyes are pleasing, its ears loose, its nose has a considerable prominence in the middle, and its tail so small, that it hardly reaches half way down its leg; but the characteristic of it is a great hunch which it bears from its neck to its rump. The place where this quadruped most abounds is the kingdom of Michuacan, where it is called *Abora*.

ITZEHOA, an ancient and handsome town of Germany, in the circle of Lower Saxony, and duchy of Holstein. It belongs to the king of Denmark, and is seated on the river Stoer, in E. Long. 9. 25. N. Lat. 54. 8.

Ithaca

Itzchoa.

Iva
||
Juan.

IVA, in botany: A genus of the pentandria order, belonging to the monoccia class of plants; and in the natural method ranking under the 49th order, *Compositæ*. The male calyx is common and triphyllous; the florets of the disc monopetalous and quinquefid; the receptacle divided by small hairs. There is no female calyx nor corolla; but five florets in the radius; two long styles; and one naked and obtuse seed.

IVAHAH is the name of one of the canoes or boats used by the islanders of the South sea for short excursions to sea: it is wall-sided and flat-bottomed. These boats are of different sizes, their length being from 72 feet to 10: but their breadth is by no means in proportion; for those of ten feet are about a foot wide, and those of more than 70 are scarcely two. The fighting ivahah is the longest, with its head and stern considerably raised above the body in a semicircular form: the stern is sometimes 17 or 18 feet high. When they go to sea, they are fastened together side by side, at the distance of about three feet, by strong poles of wood laid across and lashed to the gun-whales. On these, in the fore-part, a stage or platform is raised, about 10 or 12 feet long, somewhat wider than the boats, and supported by pillars about six feet high: on this stage are ranged the fighting men, whose missile weapons are slings and spears; and below the stage the rowers sit. The fishing ivahabs are from 40 feet long to 10; those of 25 feet and upwards occasionally carry sail. The travelling ivahah is always double, and furnished with a small neat house about five or six feet broad, and six or seven feet long.

JUAN (St) DE LA FRONTERA, a town of South-America, in Chili, in the province of Chiquito, near the lake Guanacho. The territory of this town is inhabited by 20,000 native Americans, who are tributary to Spain. It contains mines of gold, and produces a kind of almonds that are very delicate. It is seated at the foot of the Andes, in W. Long. 66. 35. S. Lat. 23. 25.

JUAN de Porto Ricco, an island of America, and one of the Caribbees, being 100 miles in length and 50 in breadth. It belongs to the Spaniards; and is full of very high mountains, and extremely fertile valleys, interspersed with woods, and well watered with springs and rivulets. It produces sugar, rum, ginger, corn, and fruits; partly proper to the climate, and partly introduced from Spain. Besides, there are so many cattle, that they often kill them for the sake of the skins alone. Here are a great number of uncommon trees, and there is a little gold in the north part of the island. It is commonly said that the air is healthy; and yet the earl of Cumberland, when he had taken this island, lost most of his men by sickness; and for that reason was forced to abandon it. This happened in the reign of Queen Elizabeth. It is subject to storms and hurricanes, like the rest of these islands. It lies to the east of Hispaniola, at the distance of 50 miles.

JUAN de Porto Ricco, the capital town of the island of Porto Ricco, with a good harbour defended by several forts, and a bishop's see. It is seated on the north coast of the island, in W. Long. 65. 35. N. Lat. 18. 30.

JUAN Fernandez, an island in the great South Sea, in S. Lat. 33. 40. and W. Long. 78. 30. from Lon-

Juan,
Juba.

don. It was formerly a place of resort for the buccannere who annoyed the western coast of the Spanish continent. They were led to resort hither from the multitude of goats which it nourished; to deprive their enemies of which advantage, the Spaniards transported a considerable number of dogs, which increasing greatly, have almost extirpated the goats, who now only find security among the steep mountains in the northern parts, which are inaccessible to their pursuers. There are instances of two men living, at different times, alone on this island for many years; the one a Musquito Indian; the other Alexander Selkirk, a Scotchman, who was, after five years, taken on board an English ship, which touched here in about 1710, and brought back to Europe. From the history of this recluse, Daniel de Foy is said to have conceived the idea of writing the adventures of Robinson Crusoe. This island was very propitious to the remains of commodore Anson's squadron in 1741, after having been buffeted with tempests, and debilitated by an inveterate scurvy, during a three months passage round Cape Horn: they continued here three months; during which time the dying crews, who on their arrival could scarcely with one united effort heave the anchor, were restored to perfect health. Captain Carteret, in the Swallow, in 1767, having met with many difficulties and impediments in his passage into the South Sea, by the Straits of Magelhaens, attempted to make this island in order to recruit the health of his men; but he found it fortified by the Spaniards, and therefore chose rather to proceed to the island of Masafuero. But M. de Bougainville that same year is said to have touched here for refreshments, although in the narrative of the voyage the fact is cautiously suppressed. This island is not quite 15 miles long and about six broad; its only safe harbour is on the north side. It is said to have plenty of excellent water, and to abound with a great variety of esculent vegetables highly antiscorbutic; besides which, commodore Anson sowed a variety of garden-seeds, and planted the stones of plums, apricots, and peaches, which he was many years afterwards informed had thriven greatly; and now doubtless furnish a very valuable addition to the natural productions of this spot. Vast shoals of fish of various kinds frequent this coast, particularly cod of a prodigious size; and it is said in not less abundance than on the banks of Newfoundland. There are but few birds here, and those few are of species well known and common.

JUAN Blanco. See **PLATINA**.

JUBA, a king of Numidia and Mauritania. He had succeeded his father Hiempsal, and he favoured the cause of Pompey against Julius Cæsar. He defeated Curio whom Cæsar had sent to Africa, and after the battle of Pharsalia he joined his forces to those of Scipio. He was conquered in a battle at Thapsus, and totally abandoned by his subjects. He killed himself with Petreus, who had shared his good fortune and his adversity, in the year of Rome 707. His kingdom became a Roman province, of which Sallust was the first governor.

JUBA II. son of the former, was led among the captives to Rome to adorn the triumph of Cæsar. His captivity was the source of the greatest honours, and his application to study procured him more glory than he

Jubilee.

he would have obtained from the inheritance of a kingdom. He gained the heart of the Romans by the courtesyness of his manners, and Augustus rewarded his fidelity by giving him in marriage Cleopatra the daughter of Antony, and conferring upon him the title of king, and making him master of all the territories which his father once possessed, in the year of Rome 723. His popularity was so great, that the Mauritians rewarded his benevolence by making him one of their gods. The Athenians raised him a statue, and the Æthiopians worshipped him as a deity. Juba wrote an history of Rome in Greek, which is often quoted and commended by the ancients. Of it only few fragments remain. He also wrote on the history of Arabia, and the antiquities of Assyria, chiefly collected from Berossus. Besides these he composed some treatises upon the drama, Roman antiquities, the nature of animals, painting, grammar, &c. now lost.

JUBILEE, among the Jews, denotes every fiftieth year; being that following the revolution of seven weeks of years; at which time all the slaves were made free, and all lands reverted to their ancient owners. The jubilees were not regarded after the Babylonish captivity. —The word, according to some authors, comes from the Hebrew, *jobel*, which signifies *fifty*: but this must be a mistake, for the Hebrew *jobel* does not signify fifty; neither do its letters, taken as cyphers, or according to their numerical power, make that number; being 10, 6, 2, and 30, that is 48. —Others say, that *jobel* signifies a *ram*, and that the jubilee was thus called, because proclaimed with a ram's horn, in memory of the ram that appeared to Abraham in the thicket. Masius chooses to derive the word from *Jabal*, the first inventor of musical instruments, which, for that reason, were called by his name; whence the words *jobel* and *jubilee* came to signify the year of deliverance and remission, because proclaimed with the sound of one of those instruments which at first was no more than the horn of a ram. Others derive *jobel* from *jabal*, in hiphil *hobil*, which signifies to recal or return; because this year restored all slaves to their liberty, &c. The institution of this festival is in Lev. xxv. 8, 17.

The learned are divided about the year of jubilee; some maintaining that it was every forty-ninth, and others that it was every fiftieth, year. The ground of the former opinion is chiefly this, that the forty-ninth year being of course a sabbatical year, if the jubilee had been kept on the fiftieth, the land must have had two sabbaths, or have lain fallow two years, which, without a miracle, would have produced a dearth. On the other hand, it is alleged, that the Scripture expressly declares for the fiftieth year, Lev. xxv. 10, 11. And besides, if the jubilee and sabbatical year had been the same, there would have been no need of a prohibition to sow, reap, &c. because this kind of labour was prohibited by the law of the sabbatical year, Lev. xxv. 4, 5. The authors of the Universal History, book i. chap. 7. note R, endeavour to reconcile these opinions, by observing, that as the jubilee began in the first month of the civil year, which was the seventh of the ecclesiastical, it might be said to be either the forty-ninth or fiftieth, according as one or other of these computations were followed. The political design of the law of the jubilee was to prevent the too great oppressions of the poor,

as well as their being liable to perpetual slavery. By this means a kind of equality was preserved through all the families of Israel, and the distinction of tribes was also preserved, that they might be able, when there was occasion, on the jubilee-year, to prove their right to the inheritance of their ancestors. It served also, like the Olympiads of the Greeks, and the Lustræ of the Romans, for the readier computation of time. The jubilee has also been supposed to be typical of the gospel state and dispensation, described by Isaiah, lxi. ver. 1, 2. in reference to this period, as the "acceptable year of the Lord."

JUBILEE, in a more modern sense, denotes a grand church solemnity or ceremony, celebrated at Rome, wherein the pope grants a plenary indulgence to all sinners; at least to as many as visit the churches of St Peter and St Paul at Rome.

The jubilee was first established by Boniface VII. in 1300, in favour of those who should go *ad limina apostolorum*; and it was only to return every hundred years. But the first celebration brought in such store of wealth to Rome, that the Germans called this the *golden year*; which occasioned Clement VI. in 1343, to reduce the period of the jubilee to fifty years. Urban VI. in 1389, appointed it to be held every thirty-five years, that being the age of our Saviour; and Paul II. and Sixtus IV. in 1475, brought it down to every twenty-five, that every person might have the benefit of it once in his life. Boniface IX. granted the privilege of holding jubilees to several princes and monasteries: for instance, to the monks of Canterbury, who had a jubilee every fifty years; when people flocked from all parts to visit the tomb of Thomas a Becket. Jubilees are now become more frequent, and the pope grants them as often as the church or himself have occasion for them. There is usually one at the inauguration of a new pope. To be intitled to the privileges of the jubilee, the bull enjoins fastings, alms, and prayers. It gives the priests a full power to absolve in all cases even those otherwise reserved to the pope: to make commutations of vows, &c. in which it differs from a *plenary indulgence*. During the time of jubilee, all other indulgences are suspended.

One of our kings, viz. Edward III. caused his birth-day to be observed in manner of a jubilee, when he became fifty years of age, in 1362, but never before or after. This he did by releasing prisoners, pardoning all offences except treason, making good laws, and granting many privileges to the people.

There are particular jubilees in certain cities, when several of their feasts fall on the same day: at Puy en Velay, for instance, when the feast of the Annunciation happens on Good-Friday; and at Lyons when the feast of St John Baptist concurs with the feast of Corpus Christi.

In 1640, the Jesuits celebrated a solemn jubilee at Rome; that being the centenary or hundredth year from their institution, and the same ceremony was observed in all their houses throughout the world.

YUCATAN, or YUCATAN, a large province of North-America in New Spain, which is a peninsula. It is over-against the island of Cuba, and contains a large quantity of timber, proper for building ships; as also sugar, cassia, and Indian corn. The original inhabitants are few, they having been very ill used by the

Jubilee,
Yucatan.

Judah
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Jude.

the Spaniards. Merida is the capital town. It is a flat level country; and is very unhealthy, which may be owing to the frequent inundations.

JUDAH, the fourth son of Jacob, and father of the chief of the tribes of the Jews, distinguished by his name, and honoured by giving birth to the Messiah, died 1636 B. C.

JUDAH Hakadosh, or the Saint, a rabbi celebrated for his learning and riches, lived in the time of the emperor Antoninus, and was the friend and preceptor of that prince. Leo of Modena, a rabbi of Venice, tells us, that rabbi Judah, who was very rich, collected about 26 years after the destruction of the temple, in a book which he called the *Misnia*, the constitutions and traditions of the Jewish magistrates who preceded him. But as this book was short and obscure, two Babylonish rabbis, Rabbina and Ase, collected all the interpretations, disputes, and additions, that had been made until their time upon the *Misnia*, and formed the book called the *Babylonish Talmud* or *Gemara*; which is preferable to the Jerusalem Talmud, composed some years before by rabbi Jochanan of Jerusalem. The *Misnia* is the text of the Talmud; of which we have a good edition in Hebrew and Latin by Surenhusius, with notes, in 3 vols folio. It were to be wished the same had been done to the *Gemara*.

The Kingdom of JUDAH was of small extent compared with that of the kingdom of Israel; consisting only of two tribes, Benjamin and Judah: its east boundary, the Jordan; the Mediterranean its west, in common with the Danites, if we except some places recovered by the Philistines, and others taken by the kings of Israel; on the south, its limits seem to have been contracted under Hadad of the royal progeny of Edom, (1 Kings xi. 14.)

Tribe of JUDAH, one of the 12 divisions of Palestine by tribes (Josh. xv.), having Idumea on the south, from the extremity of the Lacus Asphaltites, also the Wilderness of Zin, Cadefbarnea, and the brook or river of Egypt; on the east, the said lake; on the west, the Mediterranean; and on the north, the mouth of the said lake; where it receives the Jordan, Bethsema, Thimna, quite to Ekron on the sea.

JUDAISM, the religious doctrines and rites of the Jews. Judaism was but a temporary dispensation, and was to give way, at least the ceremonial part of it, at the coming of the Messiah. For a complete system of Judaism, see the books of Moses. Judaism was anciently divided into several sects; the principal whereof were the Pharisees, Sadducees, and Essenians.

At present there are two sects among the Jews, viz. the Caraites, who admit of no rule of religion but the law written by Moses; and the Rabbinites, who add to the law the traditions of the Talmud.

JUDAS MACCABEUS, a celebrated general of the Jews, renowned for his many victories over his enemies, at last slain in battle, 261 B. C. See (*History* of the) Jews, n^o 13.

JUDAS-Tree. See CERCIS.

JUDE (St), brother of St James the younger, and son of Joseph (Mat. xiii. 55.). He preached in Mesopotamia, Arabia, Syria, Idumea; and died in Berytus for the confession of Christ. He wrote that epistle which goes under his name, and after the death of most of N^o 170.

the apostles. He was cruelly put to death for reproving the superstition of the Magi.

JUDE, or the *General Epistle of Jude*, a canonical book of the New Testament, written against the heretics, who, by their disorderly lives and impious doctrines, corrupted the faith and good morals of the Christians. St Jude draws them in lively colours, as men given up to their passions, full of vanity, conducting themselves by worldly wisdom, and not by the spirit of God.

JUDEA (anc. geog.), taken largely, either denotes all Palestine, or the greater part of it; and thus it is generally taken in the Roman history: Ptolemy, Rutilius, Jerome, Origen, and Eusebius, take it for the whole of Palestine. Here we consider it as the third part of it on this side the Jordan, and that the southern part is distinct from Samaria and Galilee; under which notion it is often taken, not only in Josephus, but also in the New Testament. It contained four tribes; Judah, Benjamin, Dan, and Simeon, together with Philistia and Idumea; so as to be comprised between Samaria on the north, Arabia Petraea on the south, and to be bounded by the Mediterranean on the west, and by the Lacus Asphaltites, with part of Jordan, on the east. Josephus divides it into 11 toparchies; Pliny into 10; by which it has a greater extent than that just mentioned. See PALESTINE.

JUDENBURG, a handsome and considerable town of Germany, in the circle of Austria, and capital of Upper Styria, with a handsome castle; the public buildings with the square are very magnificent. It is seated on the river Meur. E. Long. 15. 20. N. Lat. 47. 20.

JUDEX (Matthew), one of the principal writers of the Centuries of Magdeburg, was born at Tippleswolde in Misnia, in 1528. He taught theology with great reputation; but met with many disquiets in the exercise of his ministry from party-feuds. He wrote several works, and died in 1564.

JUDGE, a chief magistrate of the law, appointed to hear causes, to explain the laws, and to pass sentence.

JUDGES, in Jewish antiquity, certain supreme magistrates who governed the Israelites from the time of Joshua till the reign of Saul. These judges resembled the Athenian archons or Roman dictators. The dignity of judge was for life, but not always in uninterrupted succession. God himself, by some express declaration of his will, regularly appointed the judges: But the Israelites did not always wait for his appointment, but sometimes chose themselves a judge in times of danger. The power of the judges extended to affairs of peace and war. They were protectors of the laws, defenders of religion, avengers of all crimes; but they could make no laws, nor impose any new burdens upon the people. They lived without pomp or retinue, unless their own fortunes enabled them to do it; for the revenues of their office consisted in voluntary presents from the people. They continued from the death of Joshua till the beginning of the reign of Saul, being a space of about 339 years.

JUDGES, for ordinary affairs, civil and religious, were appointed by Moses in every city to terminate differences; in affairs of greater consequence, the differences

Jude
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Judges.

Judges,
Judgment.

ferences were referred to the priests of Aaron's family, and the judge of the people or prince at that time established. Moses likewise set up two courts in all the cities, one consisting of priests and Levites, to determine points concerning the law and religion; the other consisting of heads of families, to decide in civil matters.

Book of Judges, a canonical book of the Old Testament, so called from its relating the state of the Israelites under the administration of many illustrious persons who were called *judges*, from being both the civil and military governors of the people, and who were raised up by God upon special occasions, after the death of Joshua, till the time of their making a king. In the time of this peculiar polity, there were several remarkable occurrences, which are recorded in this book. It acquaints us with the gross impiety of a new generation which sprung up after the death of Joshua; and gives us a short view of the dispensations of heaven towards this people, sometimes relieving and delivering them, and at others severely chastising them by the hands of their enemies.

Select JUDGES, (*Judices selecti*), in antiquity, were persons summoned by the prætor to give their verdict in criminal matters in the Roman courts, as juries do in ours. No person could be regularly admitted into this number till he was 25 years of age. The *Sortitio Judicum*, or impannelling the jury, was the office of the *Judex Questorius*, and was performed after both parties were come into court, for each had a right to reject or challenge whom they pleased, others being substituted in their room. The number of the *Judices selecti* varied, according to the nature of the charge. When the proper number appeared, they were sworn, took their places in the *subsellia*, and heard the trial.

JUDGMENT, among logicians, a faculty or rather act of the human soul, whereby it compares its ideas, and perceives their agreement or disagreement. See METAPHYSICS; and LOGIC, Part II.

JUDGMENT, in law, is the sentence pronounced by the court upon the matter contained in the record. Judgments are of four sorts. First, where the facts are confessed by the parties, and the law determined by the court; as in case of judgment upon *demurrer*: secondly, where the law is admitted by the parties, and the facts disputed; as in the case of judgment on *verdict*: thirdly, where both the fact and the law arising thereon are admitted by the defendant; which is the case of judgments by *confession* or *default*: or, lastly, where the plaintiff is convinced that either fact, or law, or both, are insufficient to support his action, and therefore abandons or withdraws his prosecution; which is the case in judgments upon a *non/suit* or *retraxit*.

The judgment, though pronounced or awarded by the judges, is not their determination or sentence, but the determination and sentence of the *law*. It is the conclusion that naturally and regularly follows from the premises of law and fact, which stands thus: Against him who hath rode over my corn, I may recover damages by law; but A hath rode over my corn; therefore I shall recover damages against A. If the major proposition be denied, this is a demurrer in law: if the minor, it is then an issue of fact: but if both be confessed or determined to be right, the conclusion, or judgment of the court cannot but follow. Which

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judgment or conclusion depends not therefore on the arbitrary caprice of the judge, but on the settled and invariable principles of justice. The judgment, in short, is the remedy prescribed by law for the redress of injuries; and the suit or action is the vehicle or means of administering it. What that remedy may be, is indeed the result of deliberation and study to point out; and therefore the style of the judgment is, not that it is decreed or resolved by the court, for then the judgment might appear to be their own; but, "it is considered," *consideratum est per curiam*, that the plaintiff do recover his damages, his debt, his possession, and the like: which implies that the judgment is none of their own; but the act of law, pronounced and declared by the court, after due deliberation and inquiry. See *Blackst. Comment.* iii. 396.

JUDGMENT, in criminal cases, is the next stage of prosecution, after TRIAL and CONVICTION are past, in such crimes and misdemeanors as are either too high or too low to be included within the benefit of clergy. For when, upon a capital charge, the JURY have brought in their VERDICT guilty in the presence of the prisoner; he is either immediately, or at a convenient time soon after, asked by the court, if he has any thing to offer why judgment should not be awarded against him. And in case the defendant be found guilty of a misdemeanor (the trial of which may, and does usually, happen in his absence, after he has once appeared), a *capias* is awarded and issued, to bring him in to receive his judgment; and if he absconds, he may be prosecuted even to outlawry. But whenever he appears in person, upon either a capital or inferior conviction, he may at this period, as well as at his arraignment, offer any exceptions to the indictment, in *arrest* or *stay* of judgment: as for want of sufficient certainty in setting forth either the person, the time, the place, or the offence. And if the objections be valid, the whole proceedings shall be set aside; but the party may be indicted again. And we may take notice, 1. That none of the statutes of *jeofails*, for amendment of errors, extend to indictments or proceedings in criminal cases; and therefore a defective indictment is not aided by a verdict, as defective pleadings in civil cases are. 2. That, in favour of life, great strictness has at all times been observed, in every point of an indictment. *Blackst. Comment.* Sir Matthew Hale indeed complains, "that this strictness is grown to be a blemish and inconvenience in the law, and the administration thereof: for that more offenders escape by the over easy ear given to exceptions in indictments, than by their own innocence; and many times gross murders, burglaries, robberies, and other heinous and crying offences, remain unpunished by these unseemly niceties: to the reproach of the law, to the shame of the government, to the encouragement of villainy, and to the dishonour of God." And yet, notwithstanding this laudable zeal, no man was more tender of life than this truly excellent judge.

A pardon also may be pleaded in arrest of judgment: and it has the same advantage when pleaded here as when pleaded upon ARRAIGNMENT; viz. the saving the ATTAINDER, and, of course, the CORRUPTION of blood: which nothing can restore but parliament, when a pardon is not pleaded till after sentence. And certainly, upon all accounts, when a man hath obtained

Judgment. obtained a pardon, he is in the right to plead it as soon as possible. See PARDON.

Praying the benefit of clergy may also be ranked among the motions in arrest of judgment. See *Benefit of Clergy*.

If all these resources fail, the court must pronounce that judgment which the law hath annexed to the crime. Of these some are capital, which extend to the life of the offender, and consist generally in being hanged by the neck till dead; though in very atrocious crimes other circumstances of terror, pain, or disgrace, are superadded: as, in treasons of all kinds, being drawn or dragged to the place of execution; in high treason affecting the king's person or government, embowelling alive, beheading, and quartering; and in murder, a public dissection. And in case of any treason committed by a female, the judgment is to be burned alive. But the humanity of the English nation has authorised, by a tacit consent, an almost general mitigation of such parts of these judgments as savour of torture or cruelty: a sledge or hurdle being usually allowed to such traitors as are condemned to be drawn; and there being very few instances (and those accidental or by negligence) of any persons being embowelled or burned, till previously deprived of sensation by strangling. Some punishments consist in exile or banishment, by abjuration of the realm, or transportation to the American colonies: others, in loss of liberty, by perpetual or temporary imprisonment. Some extend to confiscation, by forfeiture of lands, or moveables, or both, or of the profits of lands for life: others induce a disability of holding offices or employments, being heirs, executors, and the like. Some, though rarely, occasion a mutilation or dismembering, by cutting off the hand or ears: others fix a lasting stigma on the offender, by sitting the nostrils or branding in the hand or face. Some are merely pecuniary, by stated or discretionary fines: and, lastly, there are others that consist principally in their ignominy, though most of them are mixed with some degree of corporeal pain; and these are inflicted chiefly for such crimes as either arise from indigence, or render even opulence disgraceful. Such as whipping, hard labour in the house of correction, the pillory, the stocks, and the ducking-stool.

Disgusting as this catalogue may seem, it will afford pleasure to a British reader, and do honour to the British laws, to compare it with that shocking apparatus of death and torment to be met with in the criminal codes of almost every other nation in Europe. And it is moreover one of the glories of our law, that the nature, though not always the quantity or degree, of punishment is ascertained for every offence; and that it is not left in the breast of any judge, nor even of a jury, to alter that judgment which the law has beforehand ordained for every subject alike, without respect of persons. For, if judgments were to be the private opinions of the judge, men would then be slaves to their magistrates; and would live in society, without knowing exactly the conditions and obligations which it lays them under. And, besides, as this prevents oppression on the one hand; so, on the other, it stifles all hopes of impunity or mitigation, with which an offender might flatter himself if his punishment depended on the humour or discretion

of the court. Whereas, where an established penalty is annexed to crimes, the criminal may read their certain consequence in that law, which ought to be the unvaried rule, as it is the inflexible judge, of his actions.

JUDGMENT of God. See *JUDICIUM DEI*.

JUDICATURE, the quality or profession of those who administer justice.

JUDICATURE is also used to signify the extent of the jurisdiction of the judge, and the court wherein he sits to render justice.

JUDICIA CENTUMVIRALIA, in Roman antiquity, were trials before the *Centumviri*, to whom the *prætor* committed the decision of certain matters of inferior nature, like our justices of peace at the quarter sessions. During the *judicia centumviralia*, a spear was stuck up in the forum to signify that the court was sitting.

JUDICIUM CALUMNIÆ, was an action brought against the plaintiff for false accusation. The punishment, upon conviction, was *inustio frontis*, or branding in the forehead. See *INUSTIO*.

JUDICIUM DEI, *Judgment of God*, was a term anciently applied to all extraordinary trials of secret crimes; as those by arms, and single combat, and the ordeals; or those by fire, or red-hot plough-shares; by plunging the arm in boiling water, or the whole body in cold water; in hopes God would work a miracle, rather than suffer truth and innocence to perish. *Si super defendere non possit, iudicio Dei, scil. aqua vel ferro, feret de eo iustitia.*—These customs were a long time kept up even among Christians; and they are still in use in some nations. See *BATTLE*, *ORDEAL*, &c.—Trials of this sort were usually held in churches in presence of the bishops, priests, and secular judges; after three days fasting, confession, communion, and many adjurations and ceremonies described at large by Du Cange.

JUDICIUM Parium denotes a trial by a man's equals, i. e. of peers by peers, and of commoners by commoners. In *magna charta* it is more than once insisted on as the principal bulwark of our liberties, but especially by chap. 29. that no freeman shall be hurt in either his person or property, *nisi per legale iudicium parium suorum vel per legem terre*. And this was ever esteemed in all countries a privilege of the highest and most beneficial nature.

JUDICIUM Falsi, was an action which lay against the judges for corruption or unjust proceedings.

JUDICIUM Prævaricationis, was an action brought against the prosecutor, after the criminal was acquitted for suppressing the evidence of, or extenuating his guilt, rather than urging it home, and bringing it to light.

JUDOIGNE, a town of the Austrian Netherlands, in Brabant. Near this town the duke of Marlborough gained that signal victory over the French in 1706, called the *battle of Ramillies*. It is seated on the river Gete, 13 miles south-east of Louvain, and 16 north of Namur.

IVEACH, the name of two baronies of Ireland, in the county of Down, and province of Ulster. They are distinguished into Upper and Lower Iveach, and the former is by much the largest barony in that county. The name of *Iveach*, or *Hy Veach*, is said to be taken from *Abaiur*, in Irish called *Eabach*, grandfather to king *Goaltbaig*, as much as to say "the territory

elled by them. Iveach (including both baronies) was otherwise called the *Magennis country*, and in queen Elizabeth's time was governed by Sir Hugh Magennis, esteemed to have been one of the most polite of all the natives in those parts. Through part of this barony runs a chain of mountains considerably high, known by the name of *Iveach mountains*.

IUERNUS (anc. geog.), a town in the south-west of Ireland. Now *Dunkerram*, (Camden); called *Donehyne* by the natives, situated on the river Maire, in the province of Munster.

IURNUS, or *Iernus*; Ptolemy; a river in the south-west of Ireland. Now called the *Maire*, or *Kenmare*, running from east to west, in the province of Munster.

IVES, or **YVES** (St), a celebrated bishop of Chartres, born in the territory of Beauvais in the 11th century. His merit procured his election to the see of Chartres in 1092, or 1093, under the pontificate of Urban II. who had deposed Geoffroy his predecessor for sundry accusations against him. Ives particularly signalized himself by his zeal against Philip I. who had put away his wife Bertha of Holland, and had taken Bertrade of Montford, wife of Fouques count of Anjou. Afterward he devoted himself wholly to the functions of his ministry; made several religious foundations; and died in 1115. Pope Pius V. permitted the monks of the congregation of Lateran to celebrate the festival of St Ives on the 20th of May. We have a collection of decrees of his compiling, *Exceptiones ecclesiasticarum regularum*, a *Chronicon*, and 22 sermons; all very valuable pieces, which were collected and published in one volume folio in 1647, by John Baptist Souciet, canon of Chartres.

IVES (St), a sea port town of Cornwall, in England, seated on a bay of the same name; which being unsafe, it is chiefly frequented by fishermen, for the taking of pilchards. By this trade, however, and that of Cornish slates, it has thriven greatly, and 20 or 30 sail of ships belongs to its harbour. It is a corporation, governed by a mayor, 12 capital and 24 inferior burgesses, with a recorder, town clerk, &c. and it sends two members to parliament. Here is a handsome spacious church, which is often buffeted by the waves of the sea; but the mother church is at Unilalant. There is a grammar-school here, which was founded by Charles I. It has two markets in the week, and an annual fair.

IVES (St), is also the name of a town in Huntingdonshire, 64 miles from London. It has a fine stone bridge over the Ouse, had in the ninth century a mint, and was noted for its medicinal waters. Great part of it was burnt down some years ago, but it was rebuilt. Here is a very good market on Monday for fatted cattle brought from the north; and there are two fairs in the year. Here Oliver Cromwell rented a farm before he was chosen a burgess for Cambridge.

JUGERUM, in Roman antiquity, a square of 120 Roman feet; its proportion to the English acre being as 10.000 to 16.097.

JUGLANS, in botany: A genus of the monœcia order, belonging to the polyandria class of plants; and

are 18 filaments: the female calyx is quadrid, superior; the corolla quadripartite; there are two styles, and the fruit a plumb with a furrowed kernel. There are five species, the most remarkable of which is the regia or common walnut. This rises 50 feet high or more, with a large upright trunk, branching into a very large spreading head, with large pinnated leaves, of two or three pair of oval, smooth, somewhat serrated lobes, terminated by an odd one; and monœcious flowers, succeeded by clusters of large green fruit, inclosing furrowed nuts of different shapes and sizes in the varieties, ripening in September and October. Other two species, called the *nigra* and *alba*, or black and white Virginian walnut, are also cultivated in this country, though they are less proper for fruit, having very small kernels.

Culture. All the sorts are propagated by planting their nuts, which will grow in any common soil. The nuts being procured in the proper season, in their outer covers or husks if possible, they should be preserved in dry sand until February, and then planted. After two years growth in the seed-bed, they are to be taken out, and planted in the nursery, where they must remain till grown five or six feet high, when they must be transplanted where they are finally to remain; but if intended for timber as well as fruit trees, they ought to be finally transplanted when they have attained the height of three or four feet.

Uses. The fruit is used at two different stages of growth; when green to pickle, and when ripe to eat raw. As a pickle, the nuts may be used when about half or three-fourths grown, before the outer coat or shell becomes hard; such nuts should be chosen as are most free from specks, and for this purpose they must be gathered by hand. Walnuts are ready for pickling in July and August. They are fully ripe in September and October; and are then commonly beat down with long poles, especially on large trees; for as the walnuts grow mostly at the extremities of the branches, it would be troublesome and tedious to gather them by hand. As soon as gathered, lay them in heaps a few days to heat and sweat, to cause their outer husks, which adhere closely, to separate from the shell of the nuts; then clean them from the rubbish, and deposit them in some dry room for use, covering them over close with dry straw half a foot thick, and they will keep three or four months. They are always readily sold at market, especially in London; where, at their first coming in, they are sold with the husks on, by the sack or bushel; but afterwards are bought clean, and sold both by measure and by the thousand. The wood of the walnut-tree is also very valuable; not indeed where strength is necessary, it being of a very brittle nature; but the cabinet-makers and joiners esteem it highly for several sorts of household furniture and other light works; for being beautifully veined, it takes a fine polish, and the more knotty it is, the more it is valued for particular purposes. Walnut-trees are also well adapted for planting round the borders of orchards, where, by their large spreading heads, they will also guard the lesser fruit-trees from boisterous

Jugora
Juice.

boisterous winds. The kernels of the nuts are similar in quality to almonds; but are not like them used in medicine.

JUGORA, a considerable province of Muscovy, depending on the government of Archangel. It has the title of a duchy; and is inhabited by a kind of Tartars, who are very savage, and much of the same disposition with the Samoiedes.

JUGULAR, among anatomists, is applied to certain veins and glands of the neck. See **ANATOMY**.

JUGULARES, in the Linnæan system, is the name of an order or division of fish, the general character of which is, that they have ventral fins before the pectoral fins. See **ZOOLOGY**.

JUGUM, an humiliating mode of punishment inflicted by the victorious Romans upon their vanquished enemies. It was thus: They set up two spears, and laying a third across, in the form of a gallows, they ordered those who had surrendered themselves to pass under this ignominious erection, without arms or belts. None suffered the disgrace of passing *sub jugo* but such as had been obliged to surrender.

JUGURTHA, the illegitimate son of Mastaabal the brother of Micipsa. Micipsa and Mastaabal were the sons of Masinissa, king of Numidia. Micipsa, who had inherited his father's kingdom, educated his nephew with his two sons Adherbal and Hiempsal; but as he saw that the former was of an aspiring disposition, he sent him with a body of troops to the assistance of Scipio, who was besieging Numantia, hoping to lose a youth whose ambition seemed to threaten the tranquillity of his children. His hopes were frustrated; Jugurtha showed himself brave and active, and he endeared himself to the Roman general. Micipsa appointed him successor to his kingdom with his two sons, but the kindness of the father proved fatal to the children. Jugurtha destroyed Hiempsal, and stripped Adherbal of his possessions, and obliged him to fly to Rome for safety. The Romans listened to the well-grounded complaints of Adherbal; but Jugurtha's gold prevailed among the senators, and the suppliant monarch, forsaken in his distress, perished by the snares of his enemy. Cæcilius Metellus was at last sent against Jugurtha; and his firmness and success soon reduced the crafty Numidian, obliging him to fly among his savage neighbours for support. Marius and Sylla succeeded Metellus, and fought with equal success. Jugurtha was at last betrayed by his father-in-law Bocchus, from whom he claimed assistance; and he was delivered into the hands of Sylla 106 years before the Christian era. He was exposed to the view of the Roman people, and dragged in chains to adorn the triumph of Marius. He was afterwards put in a prison, where he died six days after of hunger.

IVICA, or **YVICA**, the name of an island in the Mediterranean. See **YVICA**.

JUICE, denotes the sap of vegetables, or the liquors of animals. See **ANATOMY**, **BLOOD**, **PLANTS**, **SAP**, &c.

The juices of several plants are expressed to obtain their essential salts, and for several medicinal purposes, with intention either to be used without further preparation, or to be made into syrups and extracts. The general method of extracting these juices is, by pound-

ing the plant in a marble mortar, and then by putting it into a press. Thus is obtained a muddy and green liquor, which generally requires to be clarified, as we shall soon observe. The juices of all plants are not extracted with equal ease. Some plants, even when fresh, contain so little juice, that water must be added while they are pounded, otherwise scarcely any juice would be obtained by expression. Other plants which contain a considerable quantity of juice, furnish by expression but a small quantity of it, because they contain also much mucilage, which renders the juice so viscid that it cannot flow. Water must also be added to these plants to obtain their juice. The juices thus obtained from vegetables by a mechanical method, are not, properly speaking, one of their principles, but rather a collection of all the proximate principles of plants which are soluble in water; such as the saponaceous extractive matter, the mucilage, the odoriferous principle, all the saline and saccharine substances; all which are dissolved in the water of the vegetation of the plants. Besides all these matters, the juice contains some part of the resinous substance, and the green colouring matter, which in almost all vegetables is of a resinous nature. These two latter substances, not being soluble in water, are only interposed between the parts of the other principles which are dissolved in the juice, and consequently disturbs its transparency. They nevertheless adhere together in a certain degree, and so strongly in most juices, that they cannot be separated by filtration alone. When therefore these juices are to be clarified, some previous preparations must be used by which the filtration may be facilitated. Juices which are acid, and not very mucilaginous, are spontaneously clarified by rest and gentle heat. The juices of most antiscorbutic plants abounding in saline volatile principles, may be disposed to filtration merely by immersion in boiling water; and as they may be contained in closed bottles, while they are thus heated in a water-bath, their saline volatile part, in which their medicinal qualities chiefly consist, may thus be preserved. Fermentation is also an effectual method of clarifying juices which are susceptible of it; for all liquors which have fermented, clarify spontaneously after fermentation. But this method is not used to clarify juices, because many of them are susceptible of only an imperfect fermentation, and because the qualities of most of them are injured by that process. The method of clarification most generally used, and indispensably necessary for those juices which contain much mucilage, is boiling with the white of an egg. This matter, which has the property of coagulating in boiling water, and of uniting with mucilage, does accordingly, when added to the juice of plants, unite with, and coagulate their mucilage, and separates it from the juice in form of scum, together with the greatest part of the resinous and earthy matters which disturb its transparency. And as any of these resinous matters which may remain in the liquor, after this boiling with the whites of eggs, are no longer retained by the mucilage, they may easily be separated by filtration. See **FILTRATION**.

The juices, especially before they are clarified, contain almost all the same principles as the plant itself; because in the operation by which they are extracted,

Juice.

Juice

no decomposition happens, but every thing remains, as to its nature, in the same state as in the plant. The principles contained in the juice are only separated from the grosser oily, earthy, and resinous parts, which compose the solid matter that remains under the press. These juices, when well prepared, have therefore the same medicinal qualities as the plants from which they are obtained. They must evidently differ from each other as to the nature and proportions of the principles with which they are impregnated, as much as the plants from which they are extracted differ from each other in those respects.

Most vegetable juices coagulate when they are exposed to the air, whether they are drawn out of the plant by wounds, or naturally run out; though what is called *naturally running out*, is generally the effect of a wound in the plant, from a sort of canker, or some other internal cause. Different parts of the same plant yield different juices. The same veins in their course through the different parts of the plant yield juices of a different appearance. Thus the juice in the root of the cow parsnip is of a brimstone colour; but in the stalk it is white.

Among those juices of vegetables which are clammy and readily coagulate, there are some which readily break with a whey. The great wild lettuce, with the smell of opium, yields the greatest plenty of milky juice of any known British plant. When the stalk is wounded with a knife, the juice flows readily out like a thick cream, and is white and ropy; but if these wounds are made at the top of the stalks, the juice that flows out of them is cashed with a purple tinge, as if cream had been sprinkled over it with a few drops of red wine. Some little time after letting this out, it becomes much more purple, and thickens; and finally, the thicker part of it separates, and the thin whey swims at top. The whey or thin part of this separated matter is easily pressed out from the curd by squeezing between the fingers, and the curd will then remain white; and on washing with water, it becomes like rags. The purple whey (for in this is contained all the colour) soon dries into a purple cake, and may be crumbled between the fingers into a powder of the same colour. The white curd being dried and kept for some time, becomes hard and brittle. It breaks with a shining surface like resin, and is inflammable; taking fire at a candle, and burning all away with a strong flame. The same thick part being held over a gentle heat, will draw out into tough long threads, melting like wax. The purple cake made from the whey is quite different from this; and when held to a candle scarce flames at all, but burns to a black coal. The whole virtue of the plant seems also to consist in this thin part of its juice: for the coagulum or curd, though looking like wax or resin, has no taste at all; whereas the purple cake made from the serum is extremely bitter, and of a taste somewhat resembling that of opium.

Of the same kind with the wild lettuce are the throatwort, spurge, and many other plants. These are all replete with a milky juice which separates into curds and whey like that already described. But this, though a common law of nature, is not universal; for there are many plants which yield the like milky juices without any separation ensuing upon their extravasation. The white juice of the *sonchus* never se-

parates, but dries into an uniform cake: the common red wild poppy bleeds freely with a milky juice; and the heads or capsules of seed bleed not less freely than the rest of the plant, even after the flower is fallen. This juice, on being received into a shell or other small vessel, soon changes its white to a deep yellow colour, and dries it into a cake which seems resinous and oily, but no whey separates from it. The *tragopogon*, or goat's beard, when wounded, bleeds freely a milky juice; it is at first white, but becomes immediately yellow, and then more and more red, till at length it is wholly of a dusky red. It never separates, but dries together into one cake; and is oily and resinous, but of an insipid taste. The great bindweed also bleeds freely a white juice; the flowers, as well as the stalks and leaves, affording this liquor. It is of a sharp taste; and as many of the purging plants are of this class, it would be worth trying whether this milk is not purgative.

These juices, as well as the generality of others which bleed from plants, are white like milk; but there are some of other colours. The juice of the great celandine is of a fine yellow colour; it flows from the plant of the thickness of cream, and soon dries into a hard cake, without any whey separating from it. Another yellow juice is yielded by the seed-vessels of the yellow centaury in the month of July, when the seeds are full grown. This is very clammy; it soon hardens altogether into a cake without any whey separating from it. It sticks to the fingers like birdlime, is of the colour of pale amber, and will never become harder than soft wax if dried in the shade; but if laid in the sun, it immediately becomes hard like resin. These cakes burn like wax, and emit a very pleasant smell. The great angelica also yields a yellowish juice on being wounded; and this will not harden at all, but if kept several years will still be soft and clammy, drawing out into threads or half melted resin.

Another kind of juices very different from all these, are those of a gummy nature. Some of these remain liquid a long time, and are not to be dried without the assistance of heat; the others very quickly harden of themselves, and are not inflammable. The gum of the juice of rhubarb-leaves soon hardens; and is afterwards soluble in common water, and sparkles when put into the flame of a candle. The clusters of the common honeysuckle are full of a liquid gum. This they frequently throw out, and it falls upon the leaves, where it retains its own form. The red hairs of the *ros solis* are all terminated by large bladders of a thin watery fluid. This is also a liquid gum; it sticks to the fingers, draws out into long threads, and stands the force of the sun all day. In the centre of each of these dew-drops there is a small red bladder, which stands immediately on the summit of the red hair, and contains a purple juice which may be squeezed out of it. The *pinguicula*, or butter-wort, has also a gummy matter on its leaves in much greater quantity than the *ros solis*.

Some plants yield juices which are manifestly of an oily nature. These, when rubbed, are not at all of a clammy nature, but make the fingers glib and slippery, and do not all harden on being exposed to the air. If the stalk of *elecampane* be wounded, there flows out:

Juice.

Juice
of
Julian.

out an oily juice swimming upon a watery one. The stalks of the hemlock also afford a similar oily liquor swimming upon the other; and in like manner the white mullein, the berries of ivy, the bay, juniper, dog-berry tree, and the fruit of the olive, when wounded, show their oil floating on the watery juice. Some of these oily juices, however, harden into a kind of resin. Our ivy yields such a juice very abundantly; and the juice of the small purple-berried juniper is of the same kind, being hard and fat, and not very gummy. If the bark of the common ivy is wounded in March, there will ooze out a tough and greasy matter of a yellowish colour, which, taken up between the fingers, feels not at all gummy or sticking, but melts in handling into a sort of oil, which in process of time hardens and crusts upon the wounds, and looks like brown sugar. It burns with a lasting flame, and smells very strong. The tops of the wild lettuce, and the leaves growing near the tops, if examined with a magnifying glass, show a great number of small bladders or drops of an oily juice of a brownish colour, hardening into a kind of resin; they are easily wiped off when of any size, and are truly an oily juice a little hardened. It is probable also, that the fine blue flour or powder, called the *bloom*, upon the surface of our common plums, is no other than such an oily juice exuding from their pores in small particles, and hardening into a sort of resin.

JUJUBES, in the *materia medica*, the name of a fruit of the pulpy kind, produced on a tree which Linnaeus makes a species of *rhamnus*. See *RHAMNUS*.

The jujubes have been made a general ingredient in pectoral decoctions; but they are now seldom used on these occasions, and are scarce at all heard of in prescription, or to be met with in our shops.

JUL, or **JOL**, a Gothic word signifying a "sumptuous treat;" and particularly applied to a religious festival first among the heathens and afterwards among Christians. By the latter it was given to **CHRISTMAS**; which is still known under the name of *Jul*, or *Tool*, in Denmark, Norway, Iceland, and Sweden; nay, even in the north of Britain, and whence the month of January by the Saxons was styled *Giuli*, i. e. "the Festival." As this feast had originally been dedicated by our heathen ancestors to the sun, their supreme deity; so the Christians, for the purpose of engaging the minds of their Ethnic (gentile) brethren, ordered it should be celebrated in memory of the birth of Christ: and thus it has been through ages a feast of joy and entertainment. We are indebted to Procopius for the first account of this feast.

JULEP, in pharmacy, a medicine composed of some proper liquor and a syrup or sugar, of extemporaneous preparation, without decoction. See *PHARMACY*.

JULIAN, the famous Roman emperor, styled the *Apostate*, because he professed the Christian religion before he ascended the throne, but afterwards openly embraced Paganism, and endeavoured to abolish Christianity. He made no use of violence, however, for this purpose; for he knew that violent measures had always rendered it more flourishing: he therefore behaved with a politic mildness to the Christians; recalled all who had been banished on account of religion under the reign of Constantius; and undertook to per-

vert them by his caresses, and by temporal advantages and mortifications covered over by artful pretences: but he forbade Christians to plead before courts of justice, or to enjoy any public employments. He even prohibited their teaching polite literature; well knowing the great advantages they drew from profane authors in their attacks upon Paganism and irreligion. Though he on all occasions showed a sovereign contempt for the Christians, whom he always called *Galileans*, yet he was sensible of the advantage they obtained by their virtue and the purity of their manners; and therefore incessantly proposed their example to the Pagan priests. At last, however, when he found that all other methods failed, he gave public employments to the most cruel enemies of the Christians, when the cities in most of the provinces were filled with tumults and seditions, and many of them were put to death: Though it has been pleaded by Julian's apologists, that the behaviour of the Christians furnished sufficient pretence for most of his proceedings against them, and the animosities among themselves furnished him with the means; that they were continually prone to sedition, and made a merit of insulting the public worship; and, finally, that they made no scruple of declaring, that want of numbers alone prevented them from engaging in an open rebellion. Historians mention, that Julian attempted to prove the falsehood of our Lord's prediction with respect to the temple of Jerusalem; and resolved to have that edifice rebuilt by the Jews, about 300 years after its destruction by Titus: but all their endeavours served only the more perfectly to verify what had been foretold by Jesus Christ; for the Jews, who had assembled from all parts to Jerusalem, digging the foundations, flames of fire burst forth and consumed the workmen*. However, the Jews, who were obstinately bent on accomplishing that work, made several attempts; but it is said, that all who endeavoured to lay the foundations perished by these flames, which at last obliged them entirely to abandon the work. Julian being mortally wounded in a battle with the Persians, it is said, that he then caught in his hand some of the blood which flowed from his wound; and throwing it towards heaven, cried, "Thou Galilean hast conquered." But notwithstanding this popular report, Theodoret relates, that Julian discovered a different disposition; and employed his last moments in conversing with Maximus the philosopher, on the dignity of the soul. He died the following night, aged 32. For a particular account of his reign and exploits, see (*History of*) *CONSTANTINOPLE*, n^o 7. 33—66.

No prince was ever more differently represented by different authors; on which account it is difficult to form a true judgment of his real character. It must, however, be acknowledged, that he was learned, liberal, temperate, brave, vigilant, and a lover of justice: but, on the other hand, he had apostatised to Paganism; was an enemy to the Christian religion; and was, in fact, a persecutor, though not of the most sanguinary class. We have several of his discourses or orations; some of his letters; a treatise intitled *Misopogon*, which is a satire on the inhabitants of Antioch; and some other pieces, all written in an elegant style. They were published in Greek and Latin by father Petau in 1630 in quarto; and of which

Julian.

* See *Jerusalem*.

Span-

Julian
||
Julio.

Spanheimius gave a fine edition in folio in 1696. His most famous work was that composed against the Christians, of which there are some fragments in Cyril's refutation of it.

JULIAN Period, in chronology, a period so called, as being adapted to the Julian year.

It is made to commence before the creation of the world. Its principal advantage lies here, that the same years of the cycles of the sun, moon, and indiction, of which three cycles it was made to consist by Joseph Scaliger in 1580, belonging to any year of this period, will never fall together again till after the expiration of 7980 years. There is taken for the first year of this period that which hath the first of the cycle of the sun, the first of the cycle of the moon, and the first of the indiction cycle, and so reckoning on.

The first year of the Christian era is always, in our systems of chronology, the 4714th of the Julian period.

To find what year of the Julian period any given year of Christ answers to: To the given year of Christ add 4713, because so many years of the Julian period were expired A. D. 1; and the sum gives the year of the Julian period sought.

On the contrary, having the year of the Julian period given, to find what year of Christ answers thereto: From the year of the Julian period given subtract 4713, and the remainder will be the year sought.

JULIAN (St), a harbour on the south of Patagonia, in South America, where ships usually touch that are bound to the south seas. S. Lat. 48. 15.

JULIERS, a duchy in the circle of Westphalia, in Germany, seated between the rivers Maese and Rhine, and bounded by Prussian Guelderland on the north, by the electorate of Triers on the south, by the electorate of Cologne on the east, and by the Netherlands on the west. It is about 60 miles long, and 30 broad; and is a very plentiful country, abounding in cattle, corn, and fine meadows, and is well supplied with wood; but it is most remarkable for a fine breed of horses, and wood for dying, which is gathered here in abundance. The chief towns are Juliers, Aix-la-Chapelle, Duren, Munster-Eifel, Bedbur, Wetin-burgh, and Lafteren. It is subject to the elector Palatine, with the consent of the kings of Prussia and Poland.

JULIERS, a city, capital of the duchy of Juliers in Westphalia; some think this city was founded by Julius Cæsar or Julia Agrippina; but this is much questioned by others, because it is not mentioned before Antoninus's Itinerary and Theodosius's Tables. The town is small but well fortified, and neatly built; the houses are of brick, and the streets broad and regular. The citadel is large and very strong, containing a palace of the ancient dukes, and a spacious piazza. In the suburbs there is a monastery of Carthusians, nobly endowed by several dukes of Juliers. The town is but poorly inhabited, though they have a fine woolen manufactory in this country, and likewise another of linen. It was taken by prince Maurice of Nassau in 1610, and by the Spaniards in 1682. It is seated on the river Roer, in E. Long. 6. 35. N. Lat. 50. 55.

JULIO ROMANO. See ROMANO.

JULIUS CÆSAR. See CÆSAR.

JULIUS II. (Julian de la Rovere), pope, remarkable for his warlike disposition, and his political negotiations: by the latter, he engaged the principal powers of Europe to league with him against the republic of Venice, called *the league of Cambray*, signified in 1508. The Venetians having purchased peace by the cession of part of Romania, Julius turned his arms against Louis XII. king of France, and appeared in person, armed cap a-pee, at the siege of Mirandola; which place he took by assault in 1511. But proceeding to excommunicate Louis, the king wisely turned his own weapons against him, by calling a general council at Pisa: at which the pope refusing to appear, was declared to be suspended from the holy see; and Louis, in his turn, excommunicated the pope, who died soon after in 1512. He built the famous church of St Peter at Rome, and was a patron of the polite arts.

JULIUS Vici (anc. geog.), a town of the Nemetes in Gallia Belgica; situated between the Tres Tabernæ and Noviomagus. Now *Germetheim*, a town of the Lower Palatinate, on the west side of the Rhine. E. Long. 8. 15. Lat. 49. 12.

JULIUS Pollux. See POLLUX.

JULUS, a son of Ascanius, born in Lavinium. In the succession to the kingdom of Alba, Æneas Sylvius, the son of Æneas and Lavinia, was preferred to him. He was, however, made chief priest.

JULUS, in zoology; a genus of insects of the order aptera. The feet are very numerous, being on each side twice as many as the segments of the body; the antennæ are moniliform; there are two articulated palpi; and the body is of a semicylindrical form. 1. The terrestria is a small species, having on each side 100 very short closely set feet. The body is cylindrically round, consisting of fifty segments, each of which gives rise to two pair of feet; by which means the feet stand two and two by the side of each other, so that between every two there is a little more space. Its colour is blackish, and the animal is very smooth. It is met with under stones, and in the earth. 2. The fabulosus is of an ashen-colour, smooth, and sometimes has two longitudinal bands of a dun-colour upon its back. The body is composed of about sixty segments, which appear double; one part of the segment being quite smooth, the other charged with longitudinal striæ very close-set together, which causes the cylindric body of the insect to appear intersected alternately with smooth and striated segments. Each segment gives rise to two pair of feet, which makes 240, or 120 feet on each side. These feet are slender, short, and white. The antennæ are very short, and consist of five rings. The insect, when touched, rolls itself up into a spiral; so that its feet are inwards, but yet turned towards the ground. It is found together with the preceding one, to which it bears a resemblance, though it is much larger. There are 10 other species.

JULY, the seventh month of the year, during which the sun enters the sign Leo. The word is derived from the Latin *Julius*, the surname of C. Cæsar the dictator, who was born in it. Mark Antony first gave this month the name *July*, which before was called *Quintilis*, as being the fifth month of the year in the

Julius
||
July.

Plate
CCLIII.

July

Juncus.

the old Roman kalendar established by Romulus, which began in the month of March. For the same reason, August was called *Sextilis*; and September, October, November, and December, still retain the name of their first rank.

Quæ sequitur, numero turba notata suo. OVID. Fast.

On the 19th day of this month the dog-days are commonly supposed to begin; when, according to Hippocrates and Pliny, the sea boils, wine turns sour, dogs go mad, the bile is increased and irritated, and all animals decline and languish.

July-Flowers. See DIANTHUS.

JUMIEGE, a town of Normandy in France, and in the territory of Caux, with a celebrated Benedictine abbey. It is seated on the river Seine, in E. Long. 0 55. N. Lat. 49. 25.

JUNCI LAPIDEI, in natural history, the name given by authors to a species of fossil coral, of the tubular kind, and composed of a congeries of small tubules, which are usually round and striated within. See Plate CC.

JUNCTURE, any joint or closing of two bodies. See JOINT.

JUNCTURE, in oratory, is a part of composition, particularly recommended by Quintilian, and denotes such an attention to the nature of the vowels, consonants, and syllables, in the connection of words, with regard to their sound, as will render the pronunciation most easy and pleasant, and best promote the harmony of the sentence. Thus the coalition of two vowels, occasioning an hollow and obscure sound, and likewise of some consonants, rendering it harsh and rough, should be avoided; nor should the same syllable be repeated at the beginning and end of words, because the sound becomes hereby harsh and unpleasant. The following verse in Virgil's *Æneid* is an example of juncture.

Arma virumque cano, Troja qui primus ab oris.

JUNCUS, the RUSH, in botany: A genus of the monogynia order belonging to the hexandria class of plants; and in the natural method ranking under the 5th order, *Tripetaloideæ*. The calyx is hexaphyllous; there is no corolla; the capsule is unilocular. There are many species which are universally known, being very troublesome weeds, and difficult to be eradicated. The pith of two kinds, called the *conglomeratus* and *effusus*, or round-headed and soft rushes are used for wicks to lamps and rush-lights*.

* See *Rush-Lights*.

The *conglomeratus*, and *aculus* or marine rush, are planted with great care on the banks of the sea in Holland in order to prevent the water from washing away the earth; which would otherwise be removed every tide, if it were not for the roots of those rushes, which fasten very deep in the ground, and mat themselves near the surface in such a manner as to hold the earth closely together. Therefore, whenever the inhabitants perceive that the roots of these rushes are destroyed, they are very assiduous in repairing them. In the summer-time when the rushes are fully grown, they are cut and tied up in bundles, which are dried, and afterwards carried into the larger towns and cities, where they are wrought into baskets, and several other useful things, which are frequently sent into England. These sorts do not grow so strong in this country as on

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the Maese, where they sometimes arrive at the height of four feet and upwards.

A species of rush termed *juncus odoratus*, "sweet rush, or camel's hay," is sometimes brought to us from Turkey and Arabia, tied up in bundles about a foot long. The stalk, in shape and colour, somewhat resembles a barley-straw; it is full of fungous pith like that of our common rushes: the leaves are like those of wheat, and surround the stalk with several coats, as in the reed. The flowers are of a carnation colour, striped with a lighter purple. The whole plant, when in perfection, has a hot, bitterish, not unpleasant, aromatic taste, and a very fragrant smell: by long keeping it loses greatly its aromatic flavour. Distilled with water, it yields a considerable quantity of an essential oil. It was formerly often used in medicine as an aromatic, and in obstructions of the viscera, &c. but is very little employed at present.

JUNE, the sixth month of the year, during which the sun enters the sign of Cancer. The word comes from the Latin *Junius*, which some derive à *Junone*. Ovid, in the 6th of his *Fasts*, makes the goddess say,

Junius à nostro nomine nomen habet.

Others rather derive it à *junioribus*, this being for young people as the month of May was for old ones.

Junius est juvenum; qui fuit ante seculum.

In this month is the summer solstice.

JUNGERMANNIA, in botany: A genus of the natural order of algæ, belonging to the cryptogamia class of plants. The male flower is pedunculated, and naked; the anthera quadrivalved: the female flower is sessile, naked, with roundish seeds. There are 29 species, all natives of Britain, growing in woods, shady places, by the sides of ditches, &c. Many of them are beautiful objects for the microscope.

JUNGIA, in botany: A genus of the polygamia segregatæ order, belonging to the syngenesia class of plants; the common receptacle is chaffy; the perianthium three-flowered; the florets tubular, two-lipped; the exterior lip ligulate; the interior one bipartite.

JUNIPERUS, the JUNIPER TREE: A genus of the monodelphia order, belonging to the monœcia class of plants; and in the natural method ranking under the 51st order, *Conifera*. The male amentum is a calyx of scales; there is no corolla; three stamens: the female calyx tripartite; there are three petals; and as many styles; the berry is trispermous, and equal by means of three tubercles of the indurated calyx adhering to it.

Species. 1. The *communis*, or common juniper, grows naturally in many parts of Britain upon dry barren commons, where it seldom rises above the height of a low shrub. Mr Evelyn assures us, that "the juniper, though naturally of the growth of England, is very little known in many parts of the country: for it grows naturally only in dry, chalky, or sandy land; and, where the soil is opposite to this, the plant is rarely found. Those who have been used to see it in its wild state, on sandy barren commons, &c. will have little inducement to plant it; as there they will see it procumbent, seldom showing a tendency to aspire: but when planted in a good soil, it will rise to the height of 15 or 16 feet, and produce numerous branches from the

June

Juniperus.





